FORT PECK TRIBES
PRE-DISASTER MITIGATION PLAN

Prepared for:

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LIST OF ACRONYMNS

BIA	U.S. Bureau of Indian Affairs
COE	U.S. Army Corps of Engineers
CRP	Conservation Reserve Program
DES	Montana Disaster and Emergency Services
DMA	Disaster Mitigation Act
DNRC	Montana Department of Natural Resources and Conservation
DOI	U.S. Department of Interior
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
GIS	Geographic Information Systems
HUD	U.S. Department of Housing and Urban Development
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resource Conservation Service
NWS	National Weather Service
PDM	Pre-Disaster Mitigation Plan
TERC	Tribal Emergency Response Commission
USFS	U. S. Forest Service
USGS	U. S. Geological Survey
WAPA	Western Area Power Administration

1.0 INTRODUCTION

The effects from natural and man-made hazards directly impact the safety and well being of Fort Peck tribal residents. Historically, county residents have dealt with floods, high winds, severe summer storms with damaging thunderstorms, hail, and tornadoes, harsh winter storms with extreme cold and blizzards, wildfires, drought, and hazardous material spills. While most hazards cannot be eliminated, the effects from them can be mitigated. Fort Peck Tribes, working in conjunction with Montana DES and Maxim Technologies, Inc. (Maxim), prepared this Pre-Disaster Mitigation (PDM) Plan (the Plan) to help guide and focus hazard mitigation activities. The Fort Peck Tribes Pre-Disaster Mitigation Plan profiles significant hazards to the community and identifies mitigation projects that can reduce their impacts. The purpose of the Plan is to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural and man-made hazards. The Fort Peck Tribes Pre-Disaster Mitigation Plan includes resources and information to assist tribal residents, organizations, local government, and others interested in participating in planning for natural and man-made hazards. The mitigation plan provides a list of mitigation projects that will assist the Fort Peck Tribes in reducing risk and preventing loss from future hazard events.

1.1 AUTHORITY

The Disaster Mitigation Act (DMA) of 2000 amends the Robert T. Stafford Disaster relief and emergency assistance act by adding a new section, 322 – Mitigation Planning. It requires all local governments to have an approved Pre-Disaster Mitigation Plan in place by November 1, 2003 to be eligible to receive Hazard Mitigation Grant Program project funding.

The Fort Peck Tribes have adopted this Pre-Disaster Mitigation Plan. This governing body has the authority to promote sound public policy regarding natural and man-made hazards. A copy of the signed Resolution from this jurisdiction is included as ***Appendix A*** to this plan. The Plan was adopted at the regularly scheduled meetings of the Fort Peck tribal council, which is open to the public and advertised through the communities' typical process for publicizing public meetings.

The Disaster and Emergency Services (DES) Coordinator for the Fort Peck Tribes will be responsible for submitting the adopted Plan to the State Hazard Mitigation Office in Helena, Montana. The State Hazard Mitigation Officer will then submit the Plan to the Federal Emergency Management Agency (FEMA) for review. This review will address the federal criteria outlined in FEMA Interim Final Rule 44 CFR Part 201. Upon acceptance by FEMA, the Fort Peck Tribes will gain eligibility for local mitigation project grants and post-disaster hazard mitigation grant projects (HMGP).

1.2 ACKNOWLEDGEMENTS

Many groups and individuals have contributed to development of the Fort Peck Tribes Pre-Disaster Mitigation Plan. The local DES Coordinator, District DES Representative, and the Montana State Hazard Mitigation Officer provided significant guidance and support to all aspects of plan development. The National Weather Service provided historic newspaper accounts of severe weather events and other weather data. Numerous elected officials, city and tribal personnel, and the local communities participated in the planning process and contributed significantly to the Plan's development.

1.3 PROJECT AREA LOCATION

The Fort Peck Indian Reservation is located in northeast Montana, and has a land area of about 2,093,310 acres or 3,200 square miles (DOI et al, 2002). The reservation includes portions of Roosevelt, Daniels, Sheridan and Valley Counties. Tribal headquarters for the Fort Peck Assiniboine and Sioux Tribes are at Poplar. The Missouri River forms the southern boundary of the Fort Peck Reservation. The Poplar River, Wolf Creek, Tule Creek, and Porcupine Creek flow southward through the Fort Peck Reservation and into the Missouri River. ***Map 1-1*** presents a location map of the Plan area.

The Reservation lies within the Glaciated Missouri Plateau section of the Great Plains Physiographic Province. The plains primarily consist of flat to gently rolling sedimentary and till surfaces modified by stream erosion and glaciation. Areas of dissected topography (badlands and incised drainages) exist along the Missouri River and in the headwaters of Big Muddy Creek.

Elevation on the Reservation ranges from about 1,875 feet above mean sea level (amsl) along the Missouri River to about 2,900 feet in the northwestern portion. Most of the Reservation consists of upland glaciated plains. The plains are nearly level to steeply sloping. In places the landscape is dissected by steep drainages and rough ridges of weathered shale, siltstone, and sandstone.

Land use on the Reservation is primarily agriculture (crop and livestock production), with small communities and individual homes and farms interspersed. Croplands primarily produce small grains and hay or are idle in the Conservation Reserve Program. Native rangeland and planted pastures provide forage for livestock. Livestock obtain water from dugouts, wells, and surface waters.

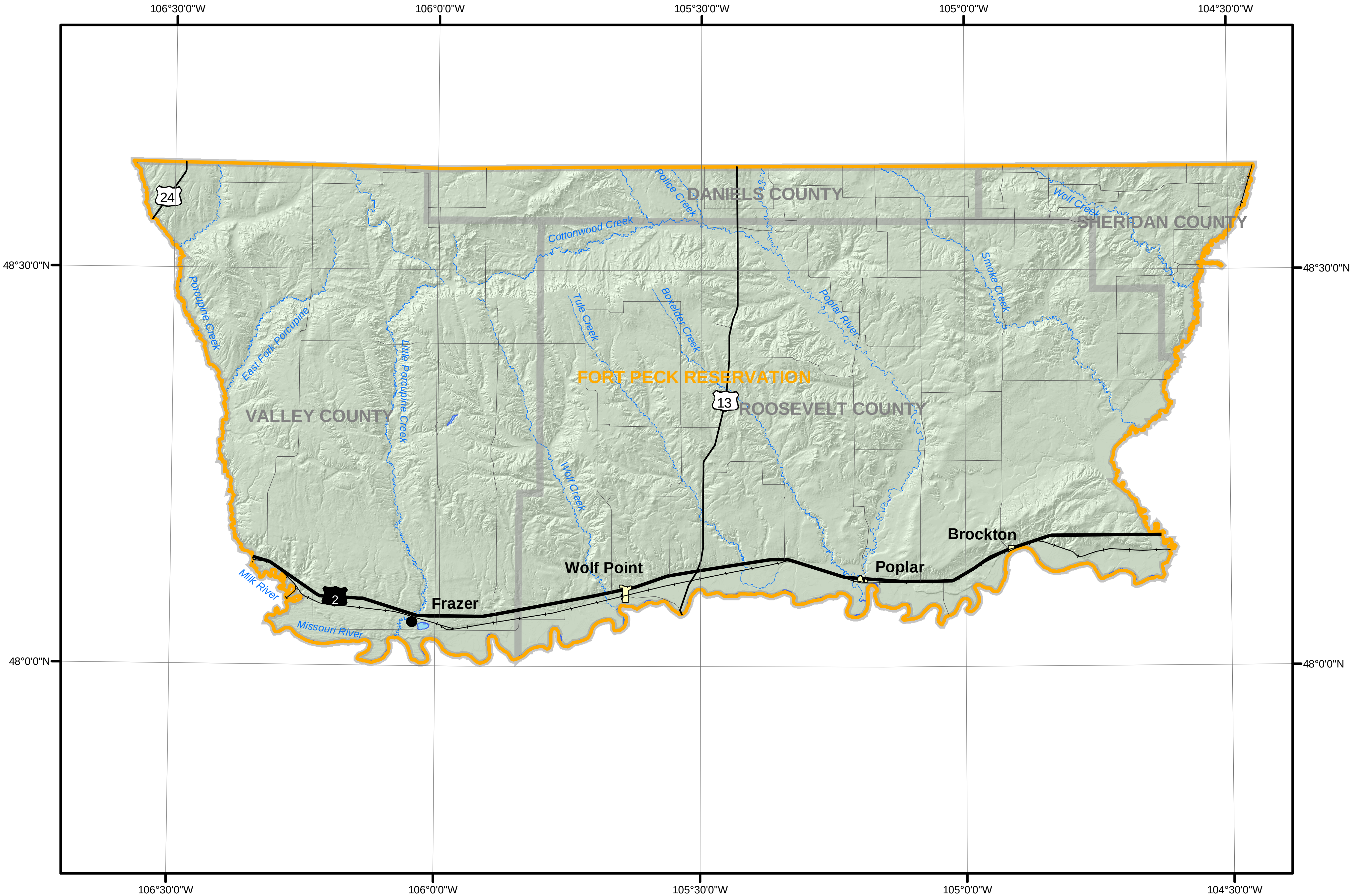
According to the FEMA website (http://www.fema.gov/regions/viii/tribal/fortpeckbg.shtm), the Fort Peck Tribes have an enrolled population of 10,760 members. Population of the Reservation is young compared with the adjoining Counties. Median age on the Reservation was 30.2 years old in 2000, while, in Roosevelt County, median age was 32.3 years, 41.7 years in Valley County, 45.1 years old in Sheridan County, and 47.0 years in Daniels County (U.S. Bureau of the Census, 2001 in DO1, 2002).

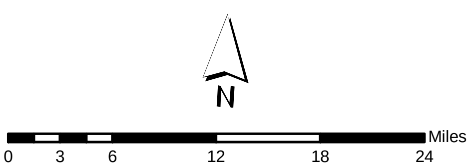
1.4 CLIMATE AND WEATHER

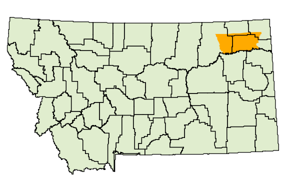
The Fort Peck Reservation is located within the region generally classified as dry continental or Steppe with four well-defined seasons. The weather can be quite changeable with large day to day temperature variations, particularly from the fall to the spring. Days with severe winter cold and summer heat are typical.

Average high temperatures in January are 15 to 22 F with average lows 5 below to 5 F above, with the coldest averages over the northern part of the reservation. In winter in particular, temperatures often vary significantly from the averages. Temperatures below -50 F have been recorded at a few locations, while typical extreme winter minimum temperatures are between -25 and -35 F. Often the coldest temperatures occur at sheltered valley locations when winds are light, but extreme wind chill situations occur almost every winter when windy conditions coincide with very low temperatures. Rapid warmups during the winter and early spring can lead to significant snow melt and flooding of small streams and rivers and/or ice jam flood problems.

Average high temperatures in July are in the 80s with average lows 55 to 60, with the warmest averages along the Missouri River valley. Brief spells with temperatures above 100 F can occur but are often short lived. Temperatures above 110 F have been reported on rare occasion. Extended periods with







Lakes
Towns, ● Unincorporated
Fort Peck Reservation
County Boundaries

U.S. Highway 2
Montana Highways
Secondary Roads
Streams, Rivers

Location Map
Fort Peck Reservation
Northeast Montana
Pre-Disaster Mitigation
Map 1-1

temperatures above 90 F occur every few years. Freezing temperatures can occur, but are rare in June and August, particularly at sheltered valley locations in the northern part of the reservation. Annual average precipitation is 11 to 15 inches, with over 70% of the precipitation falling from May through September. Precipitation can vary significantly from year to year, and location to location within a given year. November through March, are on average quite dry with average monthly precipitation of 0.50" or less. Average annual precipitation increases slowly from west to east across the reservation. The heaviest most intense precipitation often occurs with localized downpours associated with thunderstorms in June through August. Significant flash flooding can result from these downpours with over 4 inches of precipitation reported in a few events. Widespread heavy precipitation events of 1 to 2 inches can occur every few years and is most common from April through June and September through early November.

Average winter snowfall ranges from 25 to 38 inches, with the highest averages over the higher elevations over the northern part of the reservation. The heaviest snowstorms often occur from late March through May or mid October to mid November. These storms can produce more than 12 inches of snow and are often made more severe as temperatures are warmer, and therefore the snow is heavier and more difficult to travel in and remove. These storms are often accompanied by high winds resulting in blizzard conditions. In spring these storms can coincide with the calving season resulting in livestock loss. Mid winter snowstorms in general produce less then 6 inches of snow, but heavier amounts to 10 inches or more have occurred. Despite the generally lighter amounts and drier snow, high winds can result in blizzard conditions. Even without falling snow, in the colder conditions of mid winter, high winds can pick up loose snow, resulting in local ground blizzards.

Severe thunderstorms are common from June into early September. Typically the greatest hazards associated with these thunderstorms are very highs winds and large hail. Damage to structures and crops occur every summer from these storms. Tornadoes have been reported, but are relatively rare.

An important element of the climate on the Fort Peck Reservation is the often windy conditions. Average wind speeds range from 10 to 15 mph, depending on the exposure of the location. The average and peak sustained winds in the Missouri River valleys tend to be somewhat less then the winds the higher more exposed terrain in the northern portion of the reservation. The highest wind gusts often occur with thunderstorms during the summer, with gusts over 60 mph occurring every year. The highest sustained winds tend to occur in the spring and fall, with sustained winds over 40 mph occurring every year.

Table 1-1 details the top weather events recorded at the Poplar weather station. Temperature, precipitation, and snowfall tables from Poplar are representative for the eastern part of the reservation in the Missouri River valley. ***Appendix G*** contains top weather event tables for other Fort Peck Reservation communities.

TABLE 1-1 TOP WEATHER EVENTS IN POPLAR, FORT PECK RESERVATION					
Hottest Days		**Coldest Days**		**Wettest Days**	
110°	8/6/1983	-54°	2/16/1936	4.26 inches	6/12/1976
110°	7/14/1983	-54°	2/15/1936	3.05 inches	7/2/1966
110°	7/5/1937	-54°	2/1/1893	3.00 inches	5/19/1893
110°	7/27/1917	-51°	2/14/1936	2.85 inches	6/18/1921
109°	8/7/1983	-50°	1/20/1954	2.58 inches	6/12/1970
Wettest Years		**Driest Years**		**Longest Dry Spells**	
20.63 inches	1978	6.74 inches	1917	85 days	11/1912
20.31inches	1953	6.85 inches	1949	80 days	2/1903
19.19 inches	1982	7.87 inches	1936	78 days	9/1910
17.82 inches	1962	8.17 inches	1979	63 days	10/1907
17.16 inches	1914	8.37 inches	1971	62 days	9/1963
Snowiest Winters		**Greatest Snow Depths**		**Wettest Month**	
63.0 inches	1906	30 inches	3/24/1904	8.86 inches	7/1946
58.9 inches	1951	27 inches	2/17/1979	**Snowiest Month**	
43.1 inches	1921	23 inches	3/5/1982	35 inches	3/1904
41.3 inches	1916	23 inches	2/2/1969		
Notes: Data from National Weather Service					

Wind data from the Poplar weather station is representative for the lower elevations along the Missouri River Valley. As mentioned above, average and sustained winds are likely higher in the higher more exposed elevations north of the Missouri Valley.

For the purposes of this hazard assessment and mitigation plan, weather is of interest when it threatens property or life and thus becomes a hazard. The NWS provides short-term forecasts of hazardous weather to the public. In addition to issuing tornado and severe thunderstorm watches the NWS also produces regularly-scheduled severe weather outlooks and updates on various forms of hazardous weather including heavy rain and winter storms. NWS's Warning and Advisory Criteria for severe weather is presented in ***Table 1-2***. Descriptions of historic weather related hazard events and documentation of the frequency, severity, and impact of hazardous weather is presented in ***Plan Section 3***.

TABLE 1-2 *WARNING AND ADVISORY CRITERIA FOR SEVERE WEATHER*		
Summer Weather Event	**Criteria**	
Severe Thunderstorm Warning	Any thunderstorm wind gust equal to or greater than 58 mph; any hail size ¾ inch or larger.	
Tornado Warning	A violently, rotating column of air extending from the base of a thunderstorm to the ground.	
Flash Flood Warning	Flooding is imminent, water levels rise rapidly with inundation occurring in less than 6 hours.	
Flood Warning	Flooding is expected to occur more than 6 hours after the causative event.	
Winter Weather Event	**Winter Weather Advisory**	**Winter Storm/Blizzard Warning**
Snow	2-5 inches of snow in 12 hours	6 inches or more in 12 hours, or 8 inches in 24 hours
Blizzard	(see blowing snow)	Sustained winds or frequent gusts to 35 mph with visibility below a ¼ mile fro three hours or more
Blowing Snow	Visibility at or less than a ½ mile.	Visibility at or less than a ½ mile in combination with snowfall at or greater than 6 inches and/or freezing precipitation
Ice/Sleet	(see freezing rain/drizzle)	Accumulations of ¼ inch or more of ice.
Freezing Rain/Drizzle	Light precipitation and ice not forming on exposed surfaces.	None
Wind Chill	Wind chills of 20 to 39 below zero with a 10 mph wind in combination with precipitation.	Wind chills of 40 below zero or colder with a 10 mph wind in combination with precipitation.
Summer Weather Event	**Non-Precipitation Advisory**	**Non-Precipitation Warning**
High Wind	None	Sustained winds of 40 mph for an hour or any gust to 58 mph (non-convective winds).
Lake Wind	Sustained wind speeds of 25 mph or more for three or more hours.	None.
Heat	Heat index of 105 or more for at least three days.	High temperature of 105. Low of 80 or more for 3 days or more.

1.5 REGIONAL ECONOMY

The major economic occupation on the Fort Peck Reservation is cattle ranching and farming for a number of Tribal operators. Commercial business by private operators include a convenience store, gas stations, restaurants, laundromat, auto repair shop, a video arcade/fast food shop, and arts and handcrafts, and other service and commercial vendors. The majority of employment is provided by the Assiniboine and Sioux Tribes, Fort Peck Community College, Bureau of Indian Affairs, and the Indian Health Service. (http://www.mnisose.org/profiles/fortpeck.htm)

Since the 1950s the Fort Peck Tribes have undertaken extensive industrial and mineral development. The tribally owned Assiniboine and Sioux Tribal Industries (ASTI) is the largest private employer in Montana. Fort Peck was the first of the United States Tribes to develop jointly and wholly-owned oil wells. (http://www.mnisose.org/profiles/fortpeck.htm)

Education is a high priority for the Fort Peck Tribes with a tribally-operated Headstart program, a tribal scholarship program and Fort Peck Community College (FPCC) and NAES (Native American Education

Service) College. FPCC offers course work in areas leading to an Associate of Arts and Technical degrees, while NAES College offers one of the best tribal studies programs in the United States, leading to a baccalaureate degree. (http://www.mnisose.org/profiles/fortpeck.htm)

Average annual unemployment rates in 2000 in the four-county area surrounding the Reservation ranged from a low of 3.0 percent in Daniels County to a high of 9.5 percent in Roosevelt County. Unemployment rates in Valley and Sheridan counties were 4.1 percent and 4.4 percent, respectively (Montana Department of Labor and Industry, 2001 in DOI, 2002).

The estimated percent of people of all ages in poverty in the state was 15.7 percent in 1998. Roosevelt County had the highest percent of people in poverty of the four-county area with 31.7 percent, followed by Valley County (18.7 percent), Daniels County (15.6 percent), and Sheridan County (13.7 percent) (U.S. Bureau of the Census, 2001b in DOI 2002).

1.6 SCOPE AND PLAN ORGANIZATION

The scope of the Fort Peck Tribes Pre-Disaster Mitigation Plan includes the following:

- Identify and prioritize disaster events that are most probable and destructive,
- Identify critical facilities,
- Identify areas within the community that are most vulnerable,
- Develop goals for reducing the effects of a disaster event,
- Develop specific projects to be implemented for each goal,
- Develop procedures for monitoring progress and updating the Plan, and
- Officially adopt the Plan.

The Plan is organized into sections that describe the planning process (Section 2), risk assessment (Section 3), mitigation strategies (Section 4), and plan maintenance (Section 5). Appendices containing supporting information are included at the end of the Plan.

2.0 PLANNING PROCESS

The Fort Peck Tribes Pre-Disaster Mitigation (PDM) Plan is the result of a collaborative effort between tribal citizens, public agencies, local utility companies, and regional and federal organizations. Public participation played a key role in development of goals and mitigation projects. Interviews were conducted with the Fort Peck DES Coordinator, mayors, and tribal officials, and two public meetings were held to include the input of tribal residents.

2.1 CONTACT LIST

The PDM planning process was initiated by preparing a contact list of individuals whose input was needed to help develop the Plan. On the tribal level, these persons included the executive board, the DES Coordinator, and Bureau of Indian Affairs (BIA) officials. Councilpersons from the incorporated towns were listed (Wolf Point, Poplar, and Brockton), as well as the mayors, fire chiefs and public works directors. Federal agencies on the contact list included the National Weather Service, Western Area Power, and Army Corps of Engineers. Private utilities included Nemont Telephone and Sagebrush Cellular. ***Appendix B*** presents the Fort Peck Tribes contact list. Persons and entities on the contact list received a variety of information during the planning process, including project maps and documents for review, meeting notifications, and mitigation strategy documents.

2.2 STAKEHOLDER INTERVIEWS AND MEETINGS

Interviews were conducted with individuals and specialists from organizations interested in hazard mitigation planning. The interviews identified common concerns related to natural and man-made hazards and identified key long- and short-term activities to reduce risk. Stakeholders interviewed for the plan included representatives from tribal government, water providers, fire departments, and utility providers. A list of meetings and interviews with stakeholders of the Fort Peck Tribes is presented in ***Appendix B***.

2.3 FORMAL PUBLIC MEETINGS

Two public meeting were conducted for the Fort Peck Tribes during initial plan development. The meetings were held in Wolf Point on February 25, 2003, and in Poplar on February 26, 2003. The purpose of the meetings was to gather information on historic disasters, update the list of critical facilities, and gather ideas from citizens about mitigation planning and priorities for mitigation goals. The sign-in sheet from the Fort Peck Tribes public meetings and meeting summaries are presented in ***Appendix B***.

In advance of the public meeting, a press release was distributed to local and regional newspapers including the Wolf Point Herald News, Wotanin Wowapi, Great Falls Tribune, and Billings Gazette. Local radio stations who received copies of the press release as public service announcements included KVCK radio Wolf Point and Northern Ag Radio. Notices of the public meeting were sent in advance to all federal, state, and local officials on the project contact list (***Appendix B***). A copy of the press release and media distribution list is included in ***Appendix B***. ***Appendix B*** also contains copies of the press release as it appeared in several local newspapers. Reporters were in attendance at several of the public meetings and follow-up articles on Plan development appeared in local newspapers.

The Tribal Council meeting at which the resolution adopting the plan was passed provided the public with the opportunity to review the final version of the plan.

2.4 OTHER PROJECT MEETINGS

Over the course of the project numerous meetings were held with, and briefings given to, local officials and other stakeholders. At the project's inception the Montana DES District Representative and the Project Manager for Maxim Technologies Inc., toured the project area and met with mayors for most of the incorporated towns, Tribal staff, Bureau of Indian Affairs staff, representatives from local utilities, Tribal Emergency Response Commission (TERC) members, National Weather Service (NWS) staff, US Corps of Engineers (COE) staff, and others. The overall project objectives were presented at these meetings and initial concerns and potential mitigation projects were discussed.

On February 24th, 2003 project participants held a meeting with the Fork Peck Tribal Council to review project status and gather input from Tribal leaders about their concerns related to specific hazards and possible mitigation projects. The meeting was also used to introduce Hank Bowker, the FEMA Indian Nation Liaison specialist to the Tribe. The PDM project participants at the meeting included Dan Sietsema and Mark Gruener representing DES, Fred Gifford, Maxim Technologies Inc. project manager, Julie Adolphson and Mike Rawles with the National Weather Service.

2.5 PLAN REVIEW

Review copies of the draft Plan were provided to the tribal DES Coordinator for distribution in hard copy. Plan reviewers included Tribal Council members, tribal government officials, BIA officials, mayors of the various jurisdictions, representatives of the local utility companies, the National Weather Service, and other federal and local officials. Public comments were submitted to the tribal DES Coordinator after a 30-day review period. The DES Coordinator reviewed the comments and submitted a consolidated list of them to Maxim.

A review of the Plan for completeness was conducted after the initial comments were addressed. Plan copies were submitted to the Montana DES Hazard Mitigation Officer and the Montana FEMA representative for review. The review period lasted 30-days. Upon receipt of comments, the Plan was finalized and taken to the Tribal Council for adoption.

Future comments on this Plan should be addressed to:

Fort Peck Tribes Disaster and Emergency Services Coordinator
P.O. Box 1027
Poplar, Montana 59255
(406) 768-5155

3.0 HAZARD EVALUATION AND RISK ASSESSMENT

A risk assessment was conducted to address requirements of the Disaster and Mitigation Act of 2000 (DMA 2000) for evaluating the risk to the community from the highest priority hazards. DMA 2000 requires measuring potential losses to critical facilities and property resulting from natural hazards by assessing the vulnerability of buildings and critical infrastructure to natural hazards. In addition to the requirements of DMA 2000, the risk assessment approach taken in this study will evaluate risks to vulnerable populations and also examine the risk presented by man-made hazards. The goal of the risk assessment process is to determine which hazards present the greatest risk and what areas are cumulatively the most vulnerable to hazards.

The hazard risk assessment requires information about what hazards have historically impacted the community and what hazards may present risks in the future. Identifying historical and possible future hazards was primarily accomplished in two phases. The first phase entailed interviewing local government officials and staff, local emergency planning and response staff, and the general public. ***Plan Section 2*** describes the interview/public input process in detail. The second phase entailed researching government records and news publications for records of previous hazard events. The results of the initial hazard evaluation were used to focus further risk assessment on hazards that historically had caused the most problems and those judged to be of most future concern.

The risk assessment approach used for the Fort Peck Tribes Pre-Disaster Mitigation Plan entailed using Geographic Information System (GIS) software and data to develop vulnerability models for people, structures, and critical facilities and evaluating those vulnerabilities in relation to hazard profiles that model where hazards exist. This type of approach to risk assessment is very dependent on the detail and accuracy of the data used during the analysis. The schedule and resources available for conducting this risk assessment dictated that existing data be used to perform the assessment. The existing information is extensive but also has many limitations. Results of risk assessment allow hazards to be compared and relative comparisons to be made of areas within the jurisdiction.

3.1 HISTORICAL HAZARDS

The Fort Peck Reservation may be affected of many types of natural, technological, and human caused hazards. Examples of natural hazards that have impacted the region include earthquakes, flooding, wildfire, severe winter storms, tornadoes, and drought, among others. Technological hazards are caused by human processes. Technological hazards that exist in the region include explosions, urban fires, uncontrolled chemical or hazardous material release (either at a fixed location or in transit), power outage, and dam failure, among others. Human-caused hazards are the result of direct (purposeful) actions of humans. Possible human-caused hazards include civil unrest/riots, and terrorism.

Available documentation of historic hazards is directly related to their occurrence near populated areas. An exhaustive search was conducted for hazard data on the Fort Peck Reservation but due to the rural nature of the area, very little information exists. The lack of data does not mean there is a lack of hazards or risk from hazards on the Fort Peck Reservation. To illustrate this point, regional hazard information is used in the Fort Peck Tribes PDM Plan. To supplement the data specific to the reservation that was found.

The hazards most likely to affect the Fort Peck Reservation were derived from a number of sources. Hazard information was compiled by examining data from DES, FEMA, the U.S. Coast Guard, and the NWS, reviewing historical newspaper articles, and interviewing local experts. Most importantly, tribal residents voiced their opinions on what hazards had affected their lives and their communities during the public meetings. ***Table 3-1*** lists the State and Federal declared disasters that have occurred on the Fort Peck Reservation.

TABLE 3-1 FORT PECK RESERVATION DECLARED DISASTERS (*)				
Date	**Event**	**Area Affected**	**State Disaster Declaration**	**Federal Disaster Declaration**
March 2003	Flooding	Regional	Yes	No
November 14, 2000	Winter Storms	Regional	Yes	Yes
July 26, 1999	Wildland Fires	Regional	Yes	Yes
September 5, 1997	Windstorm	Wolf Point	Yes	No
March 12, 1997	Flooding	Regional	Yes	Yes
September 9, 1994	Wildland Fires	Regional	Yes	No
June, 1986	Grasshopper Infestation	Regional	Yes	No
March 1986(1)	Flooding	Nashua	Yes	Yes
March 1979(2)	Flooding	Nashua	No	No
February 1978(1,4,5)	Winter Storm	Regional	Yes	No
April 1978(2)	Flooding	Nashua	No	No
August 1975(1)	Grasshopper Infestation	Regional	Yes	No
Notes: (*) Disaster declarations are not compiled for the Fort Peck Tribes jurisdiction. The information presented is from listings for Valley and Roosevelt counties.				

3.1.1 Floods

A flood is a natural event for rivers and streams. Excess water from snowmelt and rainfall accumulates and overflows onto the banks and adjacent floodplains. Floodplains are lowlands, adjacent to rivers and lakes that are subject to recurring floods. A flash flood generally results from a torrential (short duration) rain or cloudburst on a relatively small drainage area. Flash floods are discussed in ***Plan Section 3.1.4***. Chinook winds, warm dry winds that can gust to 100 mph and that are typical to the area, often lead to the rapid melting of snow and cause flooding.

Hundreds of floods occur each year, making it one of the most common hazards in all 50 states. Floods kill an average of 150 people a year nationwide. Most injuries and deaths occur when people are swept away by flood currents and most property damage results from inundation by sediment-laden water. Faster moving floodwater can wash buildings off their foundations and sweep vehicles downstream. Pipelines, bridges, and other infrastructure can be damaged when high water combines with flood debris. Basement flooding can cause extensive damage.

3.1.1.1 Location and Extent of Previous Flood Events

The Missouri River forms the southern boundary of the Fort Peck Reservation. The major tributaries feeding into the Missouri River on the Reservation are the Poplar River, Porcupine Creek, Wolf Creek, Smoke Creek, Tule Creek, Little Porcupine Creek, and Box Elder Creek. Porcupine Creek forms the west boundary of the Reservation. Many of these drainages are subject to flooding. The municipality of Reserve is located partially in the alluvial floodplain of Big Muddy Creek and has flooding problems almost yearly. According to local residents, several residences and businesses in Reserve are located within the floodplain.

Table 3-2 presents the flood listings on the Fort Peck Reservation from the NWS Storm Events Database (***Appendix G***). Storm type definitions are presented in ***Table 1-2***.

TABLE 3-2 ***NWS STORM EVENTS DATABASE*** ***FLOOD LISTINGS; FORT PECK RESERVATION***			
Location	**Date**	**Type**	**Comments**
Reservation-wide	3/26/1997	Flood	
Reservation-wide	3/15,17/1999	3 Flood reports	$95K property damage

The Fort Peck Tribes received two disaster declarations for flooding; one during March 1986, and the other March 1997. A description of some historic flooding events on the Fort Peck Reservation is presented below.

April 1925 – The body of a 10 year old girl drowned in the flood waters of Houley Creek, 25 miles north of Wolf Point. As she crossed the ice on the swollen stream, she broke through and was thrown into the rushing waters. (*Girl is Flood Victim; Body is Found in Creek*, Glasgow Courier, April 3, 1925.)

1943 – A flood in Little Porcupine Creek washed out a bridge on the road connecting Frazer with Highway 2. (*Floodwaters Now Dropping Along Valley*, Glasgow Courier, 1943.)

July 29, 1987 – Heavy rain and flooding in the Tule Creek area was reported to have been the 100-year flood event. Farms in the area experienced extensive losses including erosion of two to six inches of topsoil, downed fences, and crop damage. Reservation roads were also damaged with 24 washouts from high floodwaters. Most of the road damage occurred at low water crossings and culverts but approaches to three bridges on Highway 13 were also washed out. Some areas reported 10 inches of rain over two days. (*Flood Damage Effects Could be Far-Reaching*, Wolf Point Herald, August 6, 1987.)

July 22, 1993 – Torrential rains moved through the Fort Peck Reservation dumping as much as eight inches of rain north of Wolf Point in a short period of time. The Powder River Road was severely damaged including a major bridge washout. Other highway problems included severe damage to the Tule Creek bridge on Highway 13 and guardrails and washed out road surfaces. The biggest disaster occurred in the Airport Addition east of Wolf Point where many people were flooded from their homes. (*Flooding Cause of Major Problems Over Weekend*, Wolf Point Herald, August 26, 1993.)

March 1997 – Warm temperatures causing snowmelt forced the Milk River past flood stage. In anticipation of the imminent flooding forecast, the communities of Frazer and Nashua were identified with a significant potential for flooding. A federal and state disaster was declared. (*Milk River Rising, But No Evacuations Ordered in Area Yet,* Great Falls Tribune, March 27, 1997.)

3.1.1.2 Floodplain and Floodway Management Ordinance

All of the Fort Peck Reservation is in the National Flood Insurance Program (NFIP) except for the incorporated communities of Wolf Point, Poplar, and Brockton. Many of the flood prone areas on the

Reservation are covered by initial review flood plain maps developed by FEMA. These maps show areas of shallow flooding and are preliminary in nature. Several federal agencies have completed studies on Poplar River flooding including the U.S. Army Corps of Engineers and U.S. Geological Survey.

The Fort Peck Tribes passed a Floodplain and Floodway Management Ordinance in 1997 to comply with the Montana Floodplain and Floodway Management Act and to ensure compliance with requirements for continued participation in the NFIP. A copy of this document is contained in ***Appendix C***. The floodplain ordinance identifies land use regulations to be applied to all identified 100-year floodplains within local jurisdictions. Identification of 100-year floodplains is based on a study on flood boundaries for the Poplar River and Porcupine Creek (Omang, 1990; Omang, 1993), a flood hazard report on the Missouri River (COE, 1986), the Box Elder Creek watershed project (SCS, 1987), flood hazard boundary maps of unincorporated areas in Roosevelt County (HUD, 1979), and Roosevelt County potential flood hazard boundary maps (1994).

3.1.2 Winter Storms

Winter storms and blizzards follow a seasonal pattern that begins in late fall and lasts until early spring. These storms have the potential to destroy property, and kill livestock and people. Winter storms may be categorized as sleet, ice storms or freezing rain, heavy snowfall or blizzards, and low temperatures. Blizzards are characterized by low visibility caused by high winds and blowing snow.

A severe winter storm is generally a prolonged event involving snow or ice and extreme cold. The characteristics of severe winter storms are determined by the amount and extent of snow or ice, air temperature, wind speed, and event duration. Severe winter storms create conditions that disrupt essential regional systems such as public utilities, telecommunications, and transportation routes. Ice storms accompanied by high winds can have destructive impacts, especially to trees, power lines, and utility services.

Winter storms are frequently the precursors to spring flooding; the more snow, the better the chances of floods if a quick warm-up occurs. Any snowfall over 4 inches is likely to have an effect on both property and lives on the Fort Peck Reservation as snow frequently combines with winds in northeast Montana to produce blizzards. The NWS reports that at least three lives have been lost due to extreme cold in northeast Montana.

3.1.2.1 <u>Location and Extent of Previous Winter Storm Events</u>

Numerous severe winter storm events have affected northeastern Montana and impacted residents of the Fort Peck Reservation. ***Table 3-3*** presents the winter weather listings from the NWS Storm Events Database (***Appendix G***). Storm type definitions are presented in ***Table 1-2***.

TABLE 3-3
NWS STORM EVENTS DATABASE
WINTER WEATHER LISTINGS; FORT PECK RESERVATION

Date	Type	Comments
11/18/1996	Heavy Snow	
12/16, 29/1996	Blizzad, Winter Storm	
1/8/1997	Extreme Windchill	1 death

TABLE 3-3 NWS STORM EVENTS DATABASE WINTER WEATHER LISTINGS; FORT PECK RESERVATION		
Date	**Type**	**Comments**
1/21,22,28 & 3/12 1997	3 Winter Storm & Blizzard reports	
2/25 & 3/23 1998	Blizzard, Heavy Snow	1 death
12/4/1998	Heavy Snow	
5/11/1999	Heavy Snow	
11/1,5/2000	2 Winter Storm Reports	$3.3M in property damage
12/15, 27/2000	Blizzard, Ice Storm	
4/1/2001	Winter Storm	
5/7/2002	Winter Storm	
Notes: Data compiled from NWS listings for Roosevelt & Valley Counties		

A brief synopsis of major winter storms, as chronicled by local newspapers, is presented below.

February 1933 – North winds brought snow, which made travel impossible in northeast Montana. Temperatures dropped to 44 below zero. Power outages occurred when wind snapped utility poles. (*Mercury Goes to 40 Below; Strong Gale Adds to Discomfort*, Glasgow Courier, February 10, 1933.)

February 1947 – A winter storm struck northeast Montana with intensity and speed that caught many unprepared. The accompanying 32 miles mph wind zero visibility on the highway and stranded many motorists. A bad spot was Kintyre flat between Nashua and Frazer where several stranded motorists narrowly escaped freezing. (*Short, Swift Blizzard Strikes; Entire County Locked in Storm*, Glasgow Courier, February 5, 1947.)

March 1951 – The winter storm of 1951 stands as one of the most severe to hit northeast Montana. Wind gusts of 55 and 60 mph caused zero visibility due to blowing snow. Motorists were stranded due to blinding conditions that caused them to drive off highways into ditches. (*Big Storm Finds Many Marooned*, Glasgow Courier, March 22, 1951.)

January 1969 – Cold temperatures, estimated to be as low as 51 degrees below zero, coupled with heavy snowfall crippled the Wolf Point area. Merchants reported economic hardship as few persons were willing to drive to the city to shop or conduct business. Highway travel was extremely hazardous due to limited visibility from blowing snow. (*51 Below Zero Cold Plagues Wolf Point Area*, Wolf Point Herald, January 30, 1969.)

February 1998 – A severe winter storm hit the northeast Montana February 25, 1998. Wind gusts up to 40 mph with heavy snow created snowdrifts as tall as housetops in some areas. (*First Blizzard of 1998*, Culbertson Searchlight, March 5, 1998.)

November 2000 – The Fort Peck Reservation was hard hit by a severe winter storm that occurred during November 2000 and received a federal disaster declaration. A summary of the letter sent to President Clinton by Governor Racicot is presented below:

"On October 31, 2000 a rainstorm hit northeast Montana. The storm started as a drizzle, however, by the early morning hours of November 1, 2000 it had turned into snow and sleet. The storm produced wind gusts of 30 to 40 mph, temperatures reaching 35 degrees below zero and snow drifts up to 3 and 4 feet deep. The initial storm was followed by additional and intermittent storms across eastern Montana. These combined storms represent the earliest and heaviest snows ever-recorded in portions of northeastern Montana."

"A winter weather event of this magnitude has a substantial impact on the commercial, municipal, residential, and agricultural arenas. The biggest impact commercially was on the electrical co-ops, which serve the rural areas. Freezing temperatures followed the rainstorm, causing ice to accumulate on power lines. The weight of the ice was so tremendous that it snapped power lines and broke poles. Overall, electrical co-ops lost upwards of 895 power poles, which affected over 6,500 customers. The power outages ranged between 12 hours up to 3 weeks in some areas."

"Vital water pumps were among the losses caused by the power outages. Therefore, municipalities suffered the loss of fire suppression along with a depletion of town emergency water supplies, causing local government to restrict citizens to an 'Emergency Only' water ration. State snowplows had to work 20 hours a day for snow removal in 'Emergency Only' travel conditions."

"Residents lost electricity, which negated their personal wells and threatened their major heat source. The amount of snow and ice was so immense that the weight collapsed roofs causing major structural damage."

3.1.3 Wildfire

A wildfire is an unplanned fire, a term which includes grass fires, forest fires and scrub fires be it man caused or natural in origin. Severe wildfire conditions have historically represented a threat of potential destruction within Montana. Negative impacts of wildfire include loss of life, property and resource damage or destruction, severe emotional crisis, widespread economic impact, disrupted and fiscally impacted government services, and environmental degradation.

Wildland/urban interface is defined as the zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuel. In northeast Montana, the wildland/urban interface typically is where the edge of local communities adjoin agricultural fields, many of which are in CRP.

U.S. Forest Service (USFS) data for 1990 indicate that 25.7 percent of reported wildfires were caused by arson. Other ignition sources were debris burns (24 percent); lightning (13.3 percent); and other (16.7 percent). Lightning can present particularly difficult problems when dry thunderstorms move across an area suffering from seasonal drought. In northeast Montana, the railroad is a relatively common ignition source of wildfires.

Multiple fires can be started simultaneously, as is often the case in northeast Montana. In dry fuel areas, these fires can cause massive damage before containment. Dry grass, associated with farmland in CRP, is the primary fuel for northeast Montana wildfires. The rate of spread of a fire varies directly with wind speed. Numerous wildfires have impacted residents in northeast Montana. The generally windy conditions typical to the region as noted in ***Plan Section 1.4*** cause wildfires to spread rapidly as happened with the Halloween Fires of 1999, described below.

3.1.3.1 Location and Extent of Previous Wildfire Events

Wildfires in 1994 and 1999 were declared State and/or Federal disasters. A description of some wildland fires that have occurred in northeast Montana is presented below.

Oswego Fire - September 11, 1971 – A raging prairie fire consumed 15,000 acres and burned the town of Oswego, in Valley County. Thirteen occupied homes were completely destroyed, along with several other vacant buildings, one of the town's two grain elevators, and a highway bridge. The local utility company suffered losses when many of their poles burned and downed electrical wire. The grass fire burned over 2.8 miles of railroad ties on Burlington Northern's tracks. The source of the fire started at the town's garbage dump where near hurricane force winds blew sparks into a haystack. The fire in Oswego was not the first that town had suffered. Twice in its history prairie fires decimated the town of Oswego, the last large one was about 1922. At the same time as the Oswego fire, a grass fire in the Wolf Creek area burned thousands of acres. The fire was set by dry lightning. (*Flames Gut Oswego; Aid Coming*, The Herald News, September 16, 1971.)

The Pines Fire - August 1, 1998 – A fire pushed by 40 mph wind threatened cabins in the Pines recreation area on Fort peck Reservoir, in southwestern Valley County. The fire was human-caused and began near the Pines Youth Camp facility. It burned approximately 1,250 acres in a heavily timbered area *(Weekend Blaze in the Pines Recreation Area,* Wolf Point Herald News, August 6, 1998.)

Murray Fire – August 6, 1999 – Firemen from Reserve, Medicine Lake and Plentywood battled a 100-acre wheat field fire about six miles northwest of Reserve, in Sheridan County. Combining was in progress and equipment malfunction caused heat or sparks that ignited the field of ripe grain. (*Fire Consumes 100 Acres; Burning Ban is Approved*, Sheridan County News, September 1, 1999.)

Outlook Fire - October 31, 1999 – A massive, wind-fueled wildfire swept across the prairie and about 20 buildings, including 3 inhabited homes, the post office, and gas station, and three grain elevators burned to the ground. At times, the blaze spread as fast as 40 mph. When the fire was finally contained it had burned a swath a mile wide and 15 miles long. The fire began about eight miles west of Outlook along the Soo Line railroad tracks, in Sheridan County. Officials said sparks from a passing locomotive set fire to the grassy right-of-way and wind gusts up to 60 mph blew it out of control. Damage to the railroad was $750,000, including a destroyed locomotive, damaged railcars, charred railroad ties, and two obliterated wooden rail bridges. (*Families Return to Burned Homes*, Great Falls Tribune November 2, 1999.) Farmers and ranchers lost livestock, forage, fences, equipment and other real property. The NWS reported 18,000 acres burned and $4 million in damages. (*Halloween 1999 Firestorms*, NWS Power Point Presentation.)

Wolf Point Fire - October 31, 1999 – A grass fire started three miles east of Wolf Point and burned east toward Poplar, cutting a four-mile wide swath. It jumped the Missouri River and into McCone County. Firefighters were battling wind ranging from 40 to 60 mph. Rural structures were burned including six homes southeast of Wolf Point and the local UPS building where a two-building complex and six trucks were destroyed. Damage was estimated between $4 and $5 million. (*Wolf Point Families Homeless*, Great Falls Tribune, November 2, 1999.) The NWS reported that 8,000 acres burned (*Halloween 1999 Firestorms*, NWS Power Point Presentation.)

Antelope Fire - October 31, 1999 – The ferocious wind that spread the Outlook fire also sent a power line to the ground southwest of Antelope, in Sheridan County. The blaze grew in rough coulees and spread rapidly in high wind. Firemen battled to save structures in the Antelope area but one occupied residence was lost. The fire burned an area 7-miles by 2-miles wide. *(Fires Ravage County*, Sheridan County News, November 3, 1999.)

3.1.4 Severe Thunderstorms

The NWS estimates that over 100,000 thunderstorms occur each year in the U.S. Approximately 10 percent are classified as severe. Thunderstorms can produce deadly and damaging tornadoes, hailstorms, intense downburst and microburst wind, lightning, and flash floods. Thunderstorms spawn as many as 1,000 tornadoes each year. Since 1975, severe thunderstorms were involved in 327 Federal disaster declarations.

Hailstorms develop from severe thunderstorms. Although they occur in every state, hailstorms occur primarily in the mid-west and are frequent during the summer months in northeast Montana. NWS data has not been compiled for the Fort Peck Reservation, but over 70 hail events affected Roosevelt County between 1955 and 2001. Nationally, hailstorms cause nearly $1 billion in property and crop damage annually, as peak activity coincides with peak agricultural seasons. Severe hailstorms also cause considerable damage to buildings and automobiles, but rarely result in loss of life. The largest hailstones reported in Roosevelt County were 3 inches in diameter and fell on June 30, 1965 (NWS data).

A windstorm is generally a short duration event involving straight-line wind and/or gusts in excess of 50 mph. Windstorms affect areas with significant tree stands, as well as areas with exposed property, major infrastructure, and aboveground utility lines.

Tornadoes are the most concentrated and violent storms produced by the earth's atmosphere. They are created by a vortex of rotating wind and strong vertical motion, which possess remarkable strength and can cause widespread damage. The most violent tornadoes are capable of tremendous destruction with wind speeds of 250 mph or more. Tornadoes are most common in the Midwest, and are more infrequent and generally small west of the Rockies.

Northeast Montana has experienced tornadoes, many of which have produced significant damage and occasionally injury or death. Over the 52 year period of record from the NWS at least 10 tornadoes have been confirmed on the Fort Peck Reservation.

3.1.4.1 <u>Location and Extent of Previous Thunderstorm Events</u>

Numerous severe thunderstorm events have affected northeastern Montana and impacted the Fort Peck Tribes. ***Table 3-4*** presents the severe summer storm listings from the NWS Storm Events Database (***Appendix G***). Storm type definitions are presented in ***Table 1-2***.

TABLE 3-4
NWS STORM EVENTS DATABASE
SEVERE SUMMER WEATHER LISTINGS IN FORT PECK RESERVATION

Location	Date	Type	Comments
Lustre, Poplar	8/3,16/1993	Flash Flood & Thunderstorm Wind reports	$50K property damage Poplar flood; $5K property damage Lustre wind
Wolf Point	6/4 & 7/2 1994	2 Hail reports	0.75- to 1-inch diameter hail

TABLE 3-4 NWS STORM EVENTS DATABASE SEVERE SUMMER WEATHER LISTINGS IN FORT PECK RESERVATION			
Location	**Date**	**Type**	**Comments**
Wolf Point, Lustre, Brockton, Frazer, Oswego	6/9-17, 24-26 & 9/4 1996	6 Hail, Flash Flood & 3 Thunderstorm Wind reports	0.75- to 1.5-inch diameter hail; wind 54 to 61 kts.; $1K property damage (Lustre)
Poplar	7/17/1997	Thunderstorm Wind report	52 kts.
Wolf Point, Poplar, Frazer, Lustre, Oswego	8/2,27-29/1997	4 Hail & 7 Thunderstorm Wind reports	0.75- to 1-inch diameter hail; winds 52 to 81 kts.; $2K property damage Poplar (wind); $10K property damage Wolf Point (wind); $10K property damage Lustre (wind)
Frazer, Brockton	5/27 & 6/23 1998	Hail & Flash Flood reports	$50K property & $25K crop damage Brockton flood; 1-inch diameter hail Frazer
Wolf Point, Poplar, Larslan, Brockton	7/4-6/1998	Tornado, Hail & 3 Flash Flood reports	0.75-inch hail; $12K property & $30K crop damage Wolf Point; $100K property & $50K crop damage Poplar; $10K property damage Brockton flood
Wolf Point, Poplar, Brockton, Frazer	7/4-21 & 8/1-23 1998	15 Hail & 4 Thunderstorm Wind reports	0.75- to 1.75-inch diameter hail; winds 52 to 73 kts.
Lustre, Poplar, Wolf Point, Oswego	6/8,19-21/1999	4 Hail, Flash Flood & 2 Thunderstorm Wind reports	0.75- to 1.75-inch diameter hail; winds 60 to 70 kts.; $25K property damage Poplar flood
Poplar, Wolf Point, Brockton	7/12,19-21/1999	10 Hail, 2 Funnel Clouds & 2 Thunderstorm wind reports	0.75- to 2-inch diameter hail; winds 56 kts; $10K property damage Wolf Point (wind)
Wolf Point, Poplar, Lustre, Brockton, Larslan, Frazer, Oswego	6/7-9 & 7/2-10 & 8/4 & 9/4 & 10/1 2000	11 Hail, 2 Flash Flood & 9 Thunderstorm Wind reports	0.75- to 1.25-inch diameter hail; winds 50 to 68 kts.
Wolf Point, Poplar	6/15,17/2001	Thunderstorm Wind & 2 Hail reports	Winds 52 kts.; 0.75-inch diameter hail
Brockton, Poplar, Wolf Point, Frazer, Oswego	7/1,5,19-21 & 8/12 2001	4 Hail, 2 Flash Flood & 7 Thunderstorm Wind reports	0.75– to 1-inch diameter hail; winds 52 to 73 kts ; $30K property damage flood
Poplar, Wolf Point	6/8,21/2002	2 Hail & 5 Thunderstorm Wind reports	0.75- to 0.88-inch diameter hail; winds 50 to 66 kts.; $20K property damage Wolf Point (wind)
Wolf Point, Poplar, Brockton, Oswego	7/4-8,14-24/2002	Hail & 8 Thunderstorm Wind reports	0.88-inch hail; winds 50 to 65 kts.
Wolf Point, Poplar, Oswego	8/6-7,16/2002	Hail, Flash Flood & 5 Thunderstorm Wind reports	0.75-inch hail; 52 to 60 kts.; $100K property & $50K crop damage Wolf Point flood
Notes: Compiled from NWS data for Valley and Roosevelt Counties			

A brief synopsis of severe thunderstorm, hail, and tornado events in northeast Montana, as chronicled by local newspapers, is presented below.

August 1906 – A disastrous hail and windstorm struck Nashua and vicinity and did tremendous damage. All the north and west facing windows in town were demolished by hail and a few buildings were blown down. All the crops were entirely destroyed. (*Destructive Storm*, Glasgow Courier, August 10, 1906.)

June 1962 – A violent rainstorm with considerable hail struck Glasgow and deposited ½-inch of moisture in 45 minutes. Winds were recorded as high as 70 mph and hailstones measured ¾ inch near the airport. The wind blew down large signs and broke power lines. Some of the heaviest damage was in Frazer and Oswego. Damage to buildings in Glasgow was serious and consisted of broken windows and damaged shingles and siding. (*Violent Storm Strikes City*, Glasgow Courier, June 21, 1962.)

May 1966 – A heavy rainstorm created flash flood conditions in the Wolf Point area when close to 2 inches of rain fell in a few hours. Over six feet of water caused city officials to close the underpass and reroute traffic. The highway east of Wolf point was also flooded from Tule Creek, as was a ¼ -mile of County road north and east of Wolf Creek. Basements of many homes were flooded. (*N.E. Areas Escape Heavy Storm Damages*, Wolf Point Herald, June 2, 1966.)

July 9, 1983 – A storm that hit the Wolf Point area demolished houses, uprooted trees and downed dozens of power lines. The storm killed one person and injured another when their truck was lifted by a tornado and thrown one-eighth of a mile into a wheat field. Other storm damage included the complete destruction of a house, garage and quonset. (*Violent Storm Causes Death, Destroys Farm*, Wolf Point Herald, July 14, 1983.)

June 1994 – Driving winds, pelting rain, and one or more funnel clouds hit the Culbertson area June 4, 1994. The storm lasted only 15 minutes but left destruction in its wake. Fences were torn down, trees came down on houses, and many buildings were destroyed. (*Damage is Heavy After Tornado Hits Culbertson*, Culbertson Searchlight, June 9, 1994.)

July 1996 – A 45 minute storm in Medicine Lake dumped 3 ¾ inches of rain and hail pile up like snow banks. The storm started around Redstone then headed southeast hitting the communities of Reserve, Medicine Lake, and Froid. Farmers reported 100 percent damage to crops and gardens. Residents in Culbertson and Bainville reported broken windows from the hail and damage to vehicles. (*Mother Nature Cuts Loose During Storm*, Culbertson Searchlight, August 1, 1996.)

August 1997 – A windstorm in the Wolf Point area, reported as one of the worst windstorms to hit the Roosevelt and Valley County areas, produced straight-line winds measuring 77 mph. The storm blew many roofs off buildings, broke windows in cars and homes and uprooted many trees. Tri-County Implement in Wolf Point reported damages in excess of $20,000. The highest winds were clocked in the Lustre area at 93 mph and 85 mph on the north side of Glasgow. (*Getting Blown Away*, Wolf Point Herald, August 4, 1997.)

3.1.5 Human-Caused and Technological Hazards

Human-caused hazards are technological hazards (accidental events) and terrorism (intentional acts). These are distinct from natural hazards primarily in that they originate from human activity.

The term "technological hazards" refers to the origins of incidents that can arise from human activities such as the manufacture, transportation, storage, and use of hazardous materials. Technological emergencies are accidental and their consequences are unintended. Examples of technological hazards are industrial accidents at either fixed facilities or transportation, and failure of a critical infrastructure component.

The term "terrorism" refers to intentional, criminal, malicious acts. Terrorism hazards include the use of Weapons of Mass Destruction, such as biological, chemical, nuclear, and radiological weapons; arson, incendiary, explosive, and armed attacks; industrial sabotage and intentional chemical releases; and "cyber terrorism".

Whether intentional or accidental, human-caused disasters involve the application of one or more modes of harmful force to the built environment. These modes are defined as contamination (chemical, biological, radiological, or nuclear hazards), energy (explosives, arson, and electromagnetic waves), or failure or denial of service (sabotage, infrastructure breakdown, and transportation service disruption). The greatest human-caused hazard risk to northeast Montana communities is the large quantities of propane, anhydrous ammonia, and petroleum stored in various locations, and the lack of security at these bulk storage facilities. Transportation of hazardous materials on highways and by railroad also poses a significant risk to the area.

3.1.5.1 Location and Extent of Previous Technological Hazard Events

Technological hazards in northeast Montana do not occur with great frequency. However, a bomb scare on the Amtrak train in Wolf Point indicates the region is not immune to terror-related hazards.

February 1996 – Amtrak offices in Philadelphia received notification by phone from a person claiming to have knowledge of a bomb placed on a train headed for western Montana. At that time, the train was 10 minutes out of Wolf Point. The decision was made to evacuate passengers from the train and to allow a search to take place. Once the train was evacuated, it was moved to the east end of town, where it was anticipated than an explosion would cause less property damage. Teams were sent from Great Falls, including a canine search team from Malmstrom and the Explosives Ordinance Disposal team from the Montana Air National Guard. No sign of explosives were found and the train was cleared to continue its journey. (Bomb Scare, Wolf Point Herald News, February 26, 1996.)

Records of human-caused disasters in Roosevelt County, available from the U.S. Coast Guard's National Response Center database, and the Montana DES Hazardous Material Response database are summarized in ***Tables 3-5*** and ***Table 3-6***, respectively.

TABLE 3-5
HUMAN CAUSED HAZARD INCIDENTS
COAST GUARD NATIONAL RESPONSE CENTER DATABASE

Incident Date	City	Suspected Responsible Company	Type of Incident	Medium Affected	Material Name
03/01/1990	Luster	Exxon USA	Pipeline	Land	Produced Water
11/19/1990	Wolf Point	Rempel Trail Transport.	Fixed	Land	Oil: Diesel
07/28/1991	Poplar		Railroad	Rail Report	
08/29/1993	Wolf Point	Montana-Dakota Utility	Pipeline	Air	Natural Gas
04/02/1994	Wolf Point		Railroad	Rail Report	
04/20/1994	Wolf Point	Gramm Royalty Lmt	Fixed	Land	Oil: Crude
05/12/1995	Poplar	Sheridan Electric	Fixed	Land	Polychlorinated Biphenyls 32ppm
06/13/1996	Wolf Point	Williston Basin Pipeline	Pipeline	Air	Natural Gas
11/27/1997	Oswego	BNSF Railroad	Railroad	Rail Report	
09/04/1997	Brockton		Railroad	Rail Report	

TABLE 3-5
HUMAN CAUSED HAZARD INCIDENTS
COAST GUARD NATIONAL RESPONSE CENTER DATABASE

Incident Date	City	Suspected Responsible Company	Type of Incident	Medium Affected	Material Name
08/22/1999	Poplar	Murphy Exploration & Prod	Fixed	Land	Oil: Crude
05/03/2001	Brockton	Cenex Harvest States	Storage Tank	Air	Ammonia, Anhydrous
09/14/2002	Wolf Point		Fixed	Water	Waste Oil
Notes: Compiled from NRC database listings for Valley and Roosevelt Counties					

TABLE 3-6
HUMAN CAUSED HAZARD INCIDENTS
MONTANA DES HAZARDOUS MATERIAL RESPONSE DATABASE

Incident Date	Geographic Location	Incident Specific Information	HazMat Name	Amount
08/12/1998	Cenex fertilizer plant Wolf Point	By-pass hose broke on transport vehicle spilling anhydrous ammonia	Anhydrous ammonia	less than 20 gallons
09/01/1998	Wolf Point Airport	75 gals of avgas lost from tank petcock. Went in sump area. Pump shut off. Plane moved.	Avgas	75 gals
11/17/1999	Highway 2 fill site near Wolf Point	Human error at fill site, Section 07 Township 27N Range 52E	Crude Oil	15 Barrels
04/17/2000	2 to 3 mi east of Poplar	Over-fill to above ground storage tanks	Crude Oil	20 barrels
07/31/2000	10 mi E of Wolf Point	28 - 50 gallon drums fell off truck during a rollover. 20 gallons spilled.	10-W40 Motor oil	20 gallons
03/22/2001	Poplar	Broken containers of herbicide/pesticide discovered in dumpster in Poplar. Dumpster owned and operated by Tribe. DEQ coordinated with Tribe to get Olympus Environmental to clean up spilled materials.	Dieldrin, LD%' Roundup	Unknown
05/03/2001	N of Brockton on Rye road	Harvest States (formerly Cenex) reported an anhydrous ammonia release. A farmer was filling his tank and failed to turn off the valve. Consequently he was burned and between 100-200 pounds of product was released.	Anhydrous Ammonia	100-200 pounds
08/07/2001	Tribal Bear Tank Battery 14-5 Palomino Field		Crude Oil	30 barrels
12/29/2001	Tribal Express Poplar	20 gallons of diesel fuel were released.	Diesel	20 gallons
02/09/2002	East of Poplar	Highway 2 Truck Unloading Facility had bulk tanks leaking into containment area. Unknown cause of leak.	Crude Oil	400 bbls
07/15/2002	Near Lustre	Oil battery fire, no release.	Crude oil	none
07/28/2002	Frazer School	Kids emptied 3 one quart bottles of sulfuric acid into school records	Sulfuric Acid	3 quarts

TABLE 3-6 HUMAN CAUSED HAZARD INCIDENTS MONTANA DES HAZARDOUS MATERIAL RESPONSE DATABASE				
Incident Date	**Geographic Location**	**Incident Specific Information**	**HazMat Name**	**Amount**
09/03/2002	Palomino Field	SWNE SEC 7 T29N R49E	Produced water (saltwater)	400 barrels
11/07/2002	South of Poplar	Found evidence of release from an unused pipeline during normal maintenance.	Crude Oil	25 barrels (1050 gal)
Notes: Compiled from DES Hazardous Material Response database listings for Valley and Roosevelt Counties				

3.1.6 Dam Failure

According to the Montana DNRC, over 300 dams exist in northeast Montana. These dams are used for flood control, fire protection, irrigation, and stock watering. Montana DNRC classifies dams in terms of breach damage, as follows: "high" – significant loss of life and property; "significant" – no loss of life and significant property damage; and, "low" – minor property damage. The Army Corps of Engineers classifies dams in terms of failure where "high" or "Category I" would cause significant loss of life and property damage; "significant" or "Category II" would cause one or two losses of life and significant property damage; and "low" or "Category III" would cause minor property damage. Dam failure usually occurs as a secondary effect of storms or earthquakes.

The DNRC database identifies two high hazard (Category I) dams on the Fort Peck Reservation; Little Porcupine Dam and Frazer Lake Dam East, on Little Porcupine Creek. According to the BIA Dam Safety Program, Little Porcupine and Frazer Lake Dams are both inactive dams built for irrigation. They are in close proximity to one another but are separate structures.

3.1.6.1 Location and Extent of Previous Dam Failure Events

It is not known how many dams have failed in Montana. The following is a summary of several dam failures in northeast Montana.

Frenchman Creek Dam Failure – Frenchman Creek Dam is located in Phillips County, 20 miles north of Saco. On April 17, 1952, the dam failed as a result of floodwater and exacerbated flooding in the Milk River Valley. The dam was completed in 1951 and had a storage capacity of about 7,000 acre-feet. The dam's main section was 926 feet long and about 40 feet high with a lower dike section at each side of the mid-valley main section. The west dike was purposely built a foot below the crest level of the spillway so that water could escape over it, in case of flooding. About the time the lower dike was overtopped, a breach was detected in the main section near the spillway. This was very small, but apparently widened as water ate through the dam. Three other irrigation dams are located on Frenchman Creek upstream across the international boundary near Val Marie, Saskatchewan. *($150,000 Loss in Frenchman Dam Failure*, Glasgow Courier, April 17, 1952.)

Midway Dam Failure – The Midway dam, 40 miles northwest of Nashua, breached during the March 1939 Porcupine Creek flood when the spillway was undermined by huge floating ice cakes. The dam was built by the Indian Reclamation Service as an irrigation structure. The dam was earth fill, faced with concrete slabs with the spillway in the middle. When the dam failed, a four-foot liquid wall swept down the valley causing extensive damage. (*Nashua Hit Twice From High Water*, Glasgow Courier, March 30, 1939.)

Carrol Dam Failure – The Carrol Dam, located eight miles northwest of Plentywood, failed in July 1946 following several inches of rain in a short timeframe. There were no fatalities attributable to the dam failure but destruction was evident throughout the 15 mile valley which took the brunt of the flood. Several homes and farm buildings were destroyed. (*Two Flash Floods Hit Sheridan County*, Plentywood Herald, July 11, 1946.)

3.1.6.2 Existing Dams in the Area

Following is a description of some of the Class I dams in the area.

Fort Peck Dam – in Valley County is one of six multipurpose mainstem projects on the upper Missouri River. Construction began in 1933 and the dam was completed in 1940. It is the largest hydraulically filled dam in the United States. The dam measures 21,026 feet in length with a maximum height of 250.5 feet. In addition to power generation, the water is managed for flood damage reduction, downstream navigation, fish and wildlife, recreation, irrigation, public water supply, and improved water quality. The total storage capacity of the reservoir is approximately 18.7 million acre-feet.

Frenchman Creek Dam, owned by the Montana DNRC, is located in Phillips County. The original dam was first completed in 1951 and failed on April 15, 1952 due to very high stream flow resulting from rapid snowmelt (see above). The dam was reconstructed in 1952-53 with a larger spillway and revisions to the seepage cutoff. Water from the Frenchman reservoir is used for irrigation, water-based recreation, and regulation of stream flow rates. DNRC ranks this dam as having a “low” downstream hazard potential.

3.1.7 Drought

A drought is an extended period of unusually dry weather. Drought is a special type of disaster because its occurrence does not require evacuation of an area nor does it constitute an immediate threat to life or property. People are not suddenly rendered homeless or without food and clothing. The basic effect of a drought is economic hardship, but it does, in the end, resemble other types of disasters in that victims can be deprived of their livelihoods and communities can suffer economic decline.

The effects of drought become apparent with a longer duration because more and more moisture-related activities are affected. Non-irrigated croplands are most susceptible to moisture shortages. Rangeland and irrigated agricultural lands do not feel the effects as quickly as the non-irrigated, cultivated acreage, but their yields can also be greatly reduced due to drought. Reductions in yields due to moisture shortages are often aggravated by wind-induced soil erosion.

In periods of severe drought, range fires can destroy the economic potential of the livestock industry, and wildlife habitat in, and adjacent to, the fire areas. Under extreme drought conditions, lakes, reservoirs, and rivers can be subject to severe water shortages, which greatly restrict the use of their water supplies. An additional hazard resulting from drought conditions is insect infestation.

3.1.7.1 Description of Previous Drought Events

The history of drought in Montana, as presented in the State of Montana Natural Hazards Mitigation Plan (DES, 2001) is summarized below.

1930's - The 1930's Dust Bowl remains the most highly publicized of past droughts in Montana, but may not necessarily be the worst.

1950's - The mid-1950's saw Montana with a period of reduced rainfall in eastern and central portions of the state. In July of 1956, four counties applied for federal disaster aid due to greatly reduced precipitation amounts since June of the previous year. By November 1956, a total of 20 Montana counties had applied for federal drought assistance.

1960's - Montana saw another drought episode in 1961. By the end of June, 17 counties had requested federal disaster designation due to lack of moisture, higher than normal temperatures, and grasshopper infestation. Small grain crops died before maturing, and range grass and dryland hay crops were deteriorating rapidly. Livestock water supplies were at critical levels. In July of 1961, the State's Crop and Livestock Reporting Service called it the worst drought since the 1930s. In 1966, the entire state experienced another episode of drought.

1980's - Another well-established drought episode occurred in eastern Montana in 1980. Glasgow received only 4.74 inches in the period from June of 1979 to May of 1980. Grasshopper infestations were seen in isolated areas, little wheat was planted, and large numbers of livestock were being sold due to the hay and water shortages. Drought-related economic losses in Montana in 1980 were estimated to be $380 million.

The drought of 1980 continued into the following year. March snowpacks were at 50-60 percent of normal, initiating forecasts of critical water shortages later in the season. Wolf Point received only six inches of precipitation in the 12-month period ending June 1979. The northeast corner of the state, where forty percent of Montana's wheat crop is produced, remained the driest area of the state.

Inadequate moisture supplies were a problem again in 1984. The seven districts involved in the Milk River Irrigation Project were out of water, and crop losses were estimated at $12 - $15 million. August of 1984 saw Montana in flames with numerous range fires burning out of control.

Drought continued to plague the state in 1985 and all 56 counties received disaster declarations. April estimates by the Montana Crop and Livestock Reporting Service put northeast Montana's pasture and range at 32 percent of normal. From 1982 through 1985, cattle herds were reduced by approximately one-third.

The continued lack of moisture in 1985 resulted in a wheat crop that was the smallest in 45 years. Grain farmers received more in government deficiency payments and insurance money than they did for their crops. For a typical 2,500 acre Montana farm/ranch, the operator lost more than $100,000 in equity over the course of that year. The state's agriculture industry lost nearly $3 billion in equity. The extended effects of this drought included the loss of thousands of off-farm jobs, the closing of many implement dealerships and Production Credit Associations.

1990's – Unusual weather conditions in northeast Montana during 1996 wreaked havoc on agricultural producers. Spring arrived late, flooding drowned alfalfa fields, and the summer was dry with rain not coming until it was too late to produce a crop. Severe winter conditions had a negative impact on the local economy, especially livestock producers. Record-setting cold temperatures occurred with snowfall in early November. Livestock feeding began two months early and required increased amounts of hay and supplemental feed. Depletion of hay supplies required that cattle be sold. The Governor requested that haying of CRP land be allowed. (Gov. Marc Racicot papers, January 15, 1997, Montana Historical Society archives).

Agricultural producers in northeast Montana faced severe adverse impacts again in 1998, due to an open winter and very little fall and spring rainfall. Both crop and rangelands were affected, but the most immediate concern was the pasture and range condition. Livestock operations had very limited feed supplies available. In many areas, native range did not green that spring, and many pastures were dormant due to the lack of rainfall and earlier high temperatures. The areas normally hayed for winter feed supplies, were also severely affected. Most areas could not be hayed at all. (Gov. Marc Racicot papers, June 8, 1998, Montana Historical Society archives).

2000's – The U.S. Department of Agriculture issued Natural Disaster Determinations for drought for the entire state of Montana for the years 2000, 2001, and 2002. This designation entitled counties to low interest loans for producers, small business administration loans, and an Internal Revenue Service provision deferring capital gains.

3.1.8 Insect Infestations

The agricultural industry in northeast Montana was particularly hard hit between 1869 and 1875 when grasshoppers completely destroyed crops. One of the most notable grasshopper invasions occurred in 1938 when "clouds of migrant hoppers came riding the wind from the southeast. They boosted populations of between 40 and 500 hoppers per square yard". Losses in the 17 counties affected by the 1938 grasshopper migration were estimated at $6,500,000 (Montana Magazine of Western History, 1985).

3.1.8.1 <u>Description of Previous Insect Infestations</u>

Insect infestations on the Fort Peck Reservation resulted in State disaster declarations in 1975 and 1986. A description of previous insect infestations in the region is presented below:

July 22, 1975 - Roosevelt County applied for State disaster assistance for abatement of mosquitoes. Assistance was requested to alleviate the infestation in livestock and recreation areas, and because of the health hazard to humans. (Letter to Governor Thomas Judge, Montana Historical Society archives).

July 26, 1975 - Valley County requested aid due to an outbreak of grasshoppers. Grasshoppers had stripped leaves from growing crops and heads from winter wheat, and had devastated gardens. The Opheim/Glentana area reported 60-70 hoppers per square yard in wheat, and the Richland/Larslan area reported 110/120 hoppers per square yard in cut hay fields. Over 40,000 acres were sprayed at a cost of over $129,000. Valley County was declared an emergency due to the plaque of grasshoppers. (Letter to Governor Thomas Judge, Montana Historical Society archives.)

3.1.9 Earthquakes

An earthquake is a trembling of the ground that results from the sudden shifting of rock beneath the earth's crust. Earthquakes may cause landslides and rupture dams. Severe earthquakes destroy power and telephone lines, gas, sewer, or water mains, which, in turn, may set off fires and/or hinder firefighting or rescue efforts. Earthquakes also may cause buildings and bridges to collapse.

Earthquakes occur along faults, which are fractures or fracture zones in the earth across which there may be relative motion. In northeast Montana, several earthquakes have been centered on the Froid-Brockton fault that runs through eastern-Roosevelt and southern-Sheridan County. Seismic risk zones are numbered 0 to 4, with a 4 representing the highest likelihood of a serious earthquake. Northeastern Montana is rated as a 0 on the Seismic Risk Zone scale.

Three quakes of magnitude 3.5 to 4.0 have been recorded in the northeastern Montana area since 1982 and one with a magnitude of 5.0 to 6.0 occurred in 1909. A magnitude 4.0 earthquake, centered about 30 miles north of Brockton, shook eastern Roosevelt County on July 28, 1998. Some residents felt the quake but no damage was reported. (*Mild Earthquake Hits NE Montana*, Daniels County Leader, August 6, 1998; *Earthquake Rocks Eastern Roosevelt County*, Wolf Point Herald, August 6, 1998.)

3.1.10 Civil Unrest

Civil unrest in not a common hazard affecting Montana; however, Garfield County made national news during the Montana Freemen crisis. In the early spring of 1996, hundreds of FBI agents surrounded the Ralph Clark ranch complex near Jordan, Montana for a total siege of 81 days. The government claimed that the nearly thirty people inside were of a radical anti-government and racist religious sect who had written bad checks and threatened judges, among other things.

3.1.11 Aircraft Accidents

The Federal Aviation Administration (FAA) has maintained a database of aircraft accidents since 1978. Database listings for northeast Montana are presented in ***Table 3-7***. No database listings for northeast Montana airports resulted in fatalities.

TABLE 3-7
NORTHEAST MONTANA AIRCRAFT ACCIDENTS FROM FAA DATABASE

Event Date	Airport Name	Aircraft Damage	Aircraft Make	Operator	Primary Flight Type	Fatalities	Injuries
11/27/02	L M Clayton/Wolf Pt	None	Fairchild	Big Sky	Commercial	0	0
09/14/00	L M Clayton/Wolf Pt	Minor	Cessna	Private	Personal	0	0
02/18/96	Wokal Field/Glasgow	Minor	Cessna	Private	Personal	0	0
10/05/95	Wokal Field/Glasgow	Minor	Swrngn	Big Sky	Air Taxi	0	0
12/29/94	Wokal Field/Glasgow	None	Swrngn	Big Sky	Air Taxi	0	0
09/18/94	Wokal Field/Glasgow	None	Swrngn	Big Sky	Air Taxi	0	0
08/20/91	Wokal Field/Glasgow	Minor	Beech	Private	Business	0	0
07/23/90	Wokal Field/Glasgow	Minor	Swrngn	Big Sky	Air Taxi	0	0
02/02/89	Wokal Field/Glasgow	None	Cessna	Big Sky	Air Taxi	0	0
04/03/88	Wokal Field/Glasgow	None	Cessna	Big Sky	Air Taxi	0	0
02/09/88	L M Clayton/Wolf Pt	None	Cessna	Big Sky	Air Taxi	0	0
10/31/83	L M Clayton/Wolf Pt	Minor	Beech	Private	Air Taxi	0	0
10/11/81	Wokal Field/Glasgow	Minor	Piper	Private	Personal	0	0

An aircraft accident involving four Plentywood residents occurred in 1962, as summarized below.

April 8, 1962 - Four Plentywood men were killed when the light plane in which they were flying crashed into a farm field about 6½ miles east of Circle Montana. According to FAA officials from Billings, a violent spring blizzard was blamed as the apparent cause of the tragedy. Authorities said the plain struck the earth at an extreme nose-low altitude with tremendous force and was completely demolished except for a potion of the tail assembly. (*Four Killed In Plane Crash*, Plentywood Herald, April 12, 1962).

3.1.12 Energy Shortage

Energy shortage is a hazard that threatens northeast Montana, as well as the entire U.S. The Arab oil embargo in 1973 and the California energy shortage of 2000 are two examples. These events are summarized below.

On October 17, 1973 OPEC imposed an oil embargo on the U.S. The embargo came at a time when 85% of American workers drove to their places of employment each day. President Nixon set the nation on a course of voluntary rationing. He called upon homeowners to turn down their thermostats and for companies to trim work hours. Gas stations were asked to hold their sales to a max of ten gallons per customer. In the month of November 1973, Nixon proposed an extension of Daylight Savings Time and a total ban on the sale of gasoline on Sunday's. A severe recession hit U.S., and gasoline lines snaked their way around city blocks (the price at the pump had risen from 30 cents a gallon to about $1.20 at the height of the crisis).

In early December 2000, the state of California was faced with the threat of rolling blackouts for several weeks because of skyrocketing electricity prices and a shortage of power supplies from out of state. The State's move to deregulate its electricity industry and the state's failure to construct new power plants was blamed for the electricity shortage.

3.2 HAZARD PRIORITIZATION

Between 1975 and the present, 12 federal and/or state disasters have been declared in Roosevelt and Valley County portions of the Fort Peck Reservation. Declared disasters have included five floods, two wildfires, two severe winter storm, one windstorm, and two grasshopper infestation. Further information on these disaster events is presented in subsequent sections of this Plan.

Public meetings were held in the Fort Peck Reservation communities of Wolf Point and Poplar. Additionally, meetings and interviews were held with public officials numerous times during development of the plan. Generally, residents of the Fort Peck Tribes identified winter storms, flooding, wildfire, and windstorms are their primary hazards. Hazards discussed and evaluated during the interviews and public meetings are presented in ***Table 3-8.***

Hazard prioritization was accomplished by determining which hazards had caused prior fatalities; resulted in property damage; had the potential to cause the most economic hardship within the Reservation; and, had the potential to affect tribal residents in the future. Based on review of the historical record and local knowledge, the Fort Peck Tribes identified four major hazards that consistently affect this geographic area – flooding, wildfires, severe winter storms and extreme cold, and, severe thunderstorms including high winds, hail and tornadoes. The threat of hazardous material incidents is a technological hazard present on the Fort Peck Reservation due to transportation corridors (e.g. highway, railroad) through the area. Security of infrastructure from terrorism was also identified as a technological hazard of concern.

TABLE 3-8
HAZARDS EVALUATION DURING PDM PLAN DEVELOPMENT

Natural Hazards	**Geologic Hazards**	**Hydrologic Hazards**
Thunderstorms & Lightning	Landslides	Floods
Tornadoes	Land Subsidence	Flashfloods
Windstorms	Earthquakes	Erosion
Hailstorms	Volcanic Eruption	
Severe Winter Storms	Expansive Soils	
Avalanches		**Technological Hazards**
Extreme Heat and Cold	**People-Specific Hazards**	Dam Failure
Wildfire	Bomb Threats	Power Failure
Insect Infestation	Terrorism	Nuclear Accidents
	Hostage Situation	Nuclear Attacks
Biological Hazards	School/Business Violence	Fixed Site (drug labs, pipelines, refineries, USTs, etc.)
West Nile Virus	Cyber-terrorism	
Hanta Virus	Civil Disturbance	Transportation (railway, roadway, waterway, airway)
	Airplane accident	

3.3 ASSESSING VULNERABILITY: IDENTIFYING ASSETS & VULNERABLE POPULATIONS

Assessing vulnerability requires understanding the location and importance of those things that the community values. For purposes of this risk assessment, building structural values, buildings that house critical services to the community, and people, were identified as valued community resources. To assess the vulnerability of these community assets, a model of their locations and characteristic was developed to be used in conjunction with hazard profiles for performing the risk assessment.

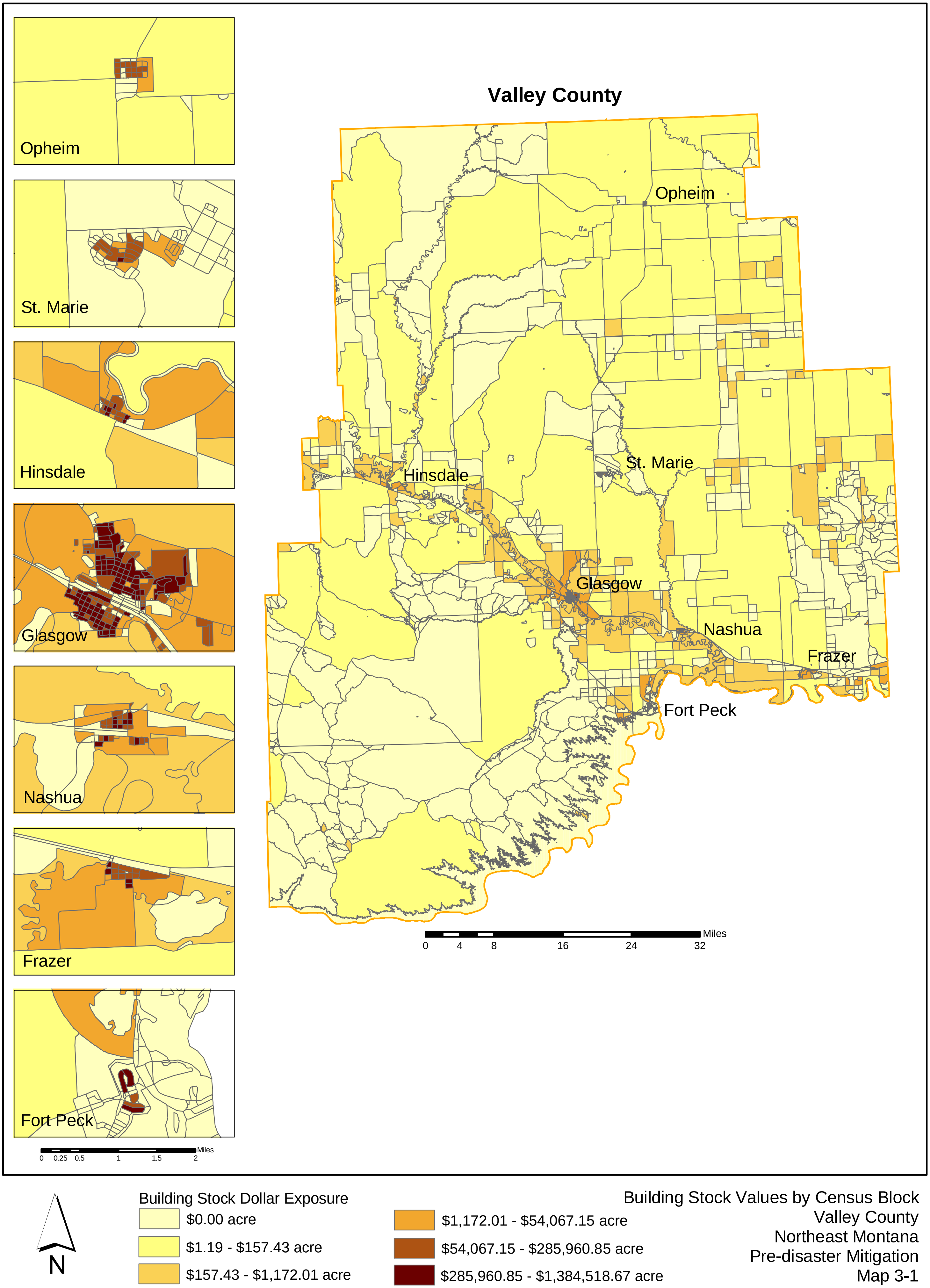
3.3.1 Building Values

Analysis of building stock values is based on the building stock data available from the FEMA HAZUS software. The documentation for this data is provided in ***Appendix E***. Building stock data available in HAZUS were compiled at the census track level. Due to the largely rural nature of this project area, census tracks do not provide a high enough resolution to differentiate one area from another for hazard assessment. To allow analysis of building stock values at the census block level the building stock structure values were assigned to census blocks in the same proportion that a given block represents the percentage of population in the track. ***Map 3-1*** shows building stock values by census block.

3.3.2 Critical Facilities and Infrastructure

Critical facilities are of particular concern because they provide, or are used to provide, essential products and services that are necessary to preserve the welfare and quality of life and fulfill important public safety, emergency response, and/or disaster recovery functions.

Critical facilities are defined as facilities critical to government response and recovery activities (i.e., life safety and property and environmental protection). Critical facilities include: 911 emergency call centers, emergency operations centers, police and fire stations, public works facilities, sewer and water facilities, hospitals, bridges and roads, and shelters; and facilities that, if damaged, could cause serious secondary impacts (i.e., hazardous material facility). Critical facilities also include those facilities that are vital to the continued delivery of community services or have large vulnerable populations. These


Valley County
Opheim
St. Marie
Hinsdale
Glasgow
Nashua
Frazer
Fort Peck
Miles
0 4 8 16 24 32
0 0.25 0.5 1 1.5 2
N
Building Stock Dollar Exposure
$0.00 acre
$1.19 - $157.43 acre
$157.43 - $1,172.01 acre
$1,172.01 - $54,067.15 acre
$54,067.15 - $285,960.85 acre
$285,960.85 - $1,384,518.67 acre
Building Stock Values by Census Block
Valley County
Northeast Montana
Pre-disaster Mitigation
Map 3-1

facilities may include: buildings such as the jail, law enforcement center, public services buildings, community corrections center, the courthouse, and juvenile services building and other public facilities such as hospitals, nursing homes and schools. ***Appendix C*** lists critical facilities on the Fort Peck Reservation.

Critical facilities data were obtained by mapping the FEMA HAZUS critical facilities data and then having the maps reviewed, corrected, and enhanced during public meetings. Accurate location information was not available for many of the critical facilities listed in ***Appendix C***. Only those facilities that could be located accurately were included in the analysis. To provide a uniform analysis, critical facilities were assigned to the appropriate census block and the block was given a score based on the number of critical facilities it contains.

3.3.3 Future Growth and Land Use Trends

The Reservation's population consists of 52% Indian population and 48% non Indian population, and has been steadily increasing. According to the Tribal Planner, this trend is expected to continue into the future.

Agriculture is the primary activity for both sectors of the population whether through production or agricultural land leasing. Economic development projects on the reservation include the following:

Dry Prairie Rural Water System and Fort Peck Assiniboine Sioux Water Supply System, are municipal, rural, and industrial projects that will provide an adequate supply of good—quality water for domestic and industrial use and for livestock water in the Fort Peck Reservation and Dry Prairie service areas. The projects will consist of a water withdrawal intake and treatment plant near the community of Poplar, and pumping stations, pipelines, storage tanks, power lines, and other ancillary facilities that will serve a future population of about 30,000 people with water from the Missouri River.

Future development projects on the Fort Peck Reservation include:

- New Housing Project to be constructed at the location of the former Poplar airport.
- New airport to be constructed one mile northeast of Poplar
- Downtown redevelopment plan whereby vacant buildings are torn down and new buildings constructed. Currently, a former auto dealership in Poplar is being removed to make way for a new vocational education center.

Although local officials have indicated that there are no future buildings, infrastructure or critical facilities proposed that would be located in identified hazard areas, mitigation options will be considered in future land use decisions.

3.3.4 Vulnerable Populations

A significant factor in the impact of any hazard is the effect it has on people. The severity of the impact is related to the intensity of the hazard, the population affected, and the population's ability to protect itself. To model the ability to self-protect and recover from hazards, age and indicators of economic well being were used. The population data used to develop the vulnerability model was derived from the 2000 Census. To model overall vulnerability the following equation was used:

- Score = (societal variable for block / total societal variable in jurisdiction) / maximum societal variable for any block in the jurisdiction)

This formula creates a score for each variable that is based on the percentage of that variable in the jurisdiction and is normalized to a scale that is the same as the other variables. The societal variables that were used to determine the overall societal vulnerability per census block were:

- Population Density
- Age > 65
- Age < 18
- Income < Poverty Level
- No High School
- Population with Disabilities
- Population on Public Assistance

Each block was assigned a score for each societal vulnerability and an overall societal vulnerability by adding the individual societal vulnerability scores and dividing by seven, which is the total number of variables evaluated. ***Map 3-2*** depicts total societal vulnerability by census block.

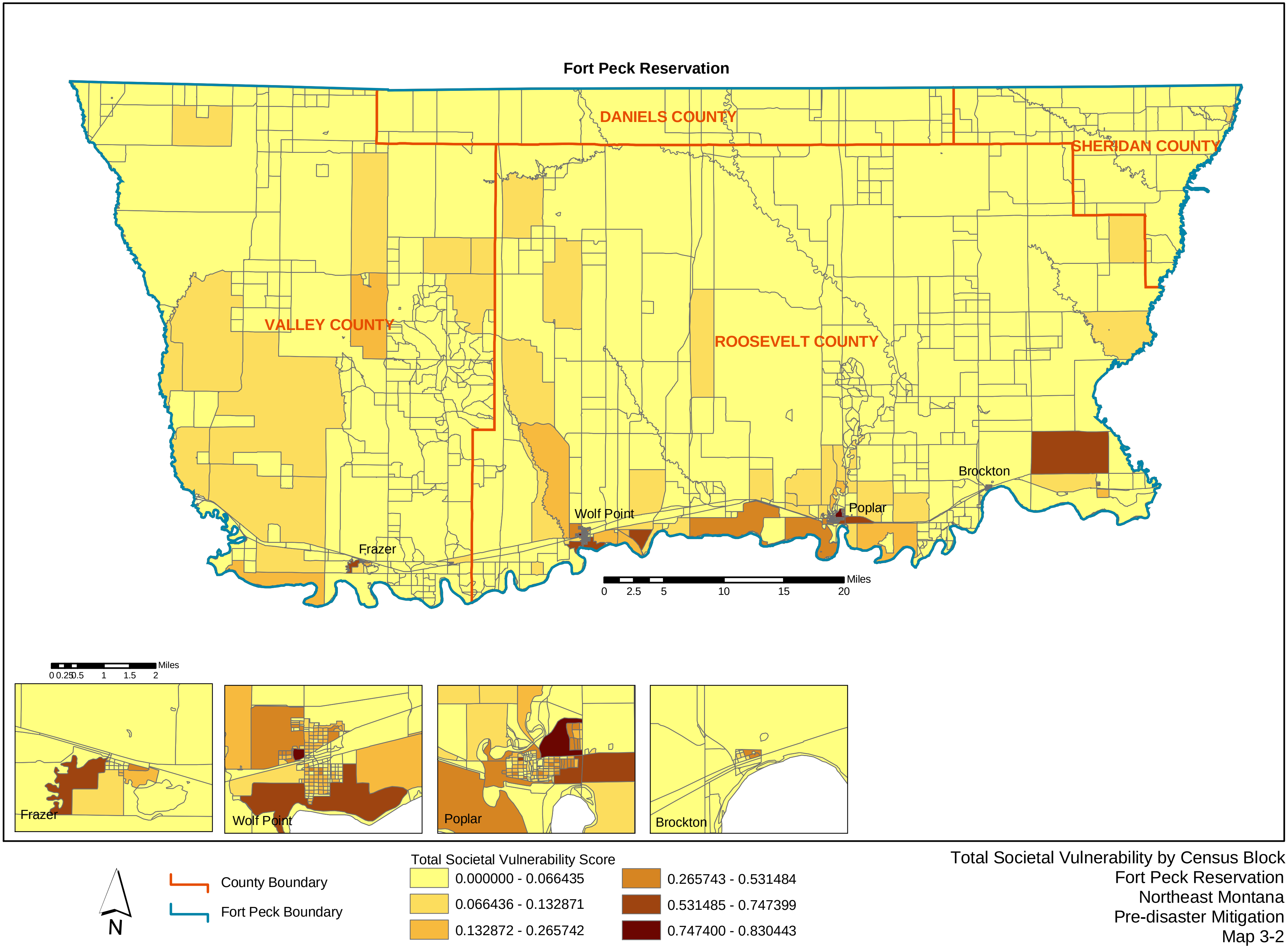
3.4 HAZARD PROFILES

Hazard profiles define the frequency, location, and intensity of hazards that may impact a community. Profiles were developed for hazards that historically have had the most effect on the community and the ones that the community identified as being of most concern during public meetings.

3.4.1 Hazard Frequency

The frequency of past hazard events was calculated to determine the probability of future hazards occurring. Accurate and consistent records have not been kept for many hazards. Where records have been kept, they are often heavily biased towards only reflecting hazards that occurred in the more populated areas of the jurisdiction. This is especially problematic in areas like the Fort Peck Reservation that is largely rural.

Data from the NOAA National Climate Data Center Storm Events database and the Montana DES was used to compile frequencies of natural hazards. The complete listing of events from this database can be found in ***Appendix F***.



Total Societal Vulnerability by Census Block
Fort Peck Reservation
Northeast Montana
Pre-disaster Mitigation
Map 3-2

TABLE 3-9 FORT PECT RESERVATION HAZARD FREQUENCIES***			
Hazard	**Number of Events**	**Period of Record In Years**	**Frequency In Years**
Flooding	18	9	2.0
Winter Storms	17	9	1.9
*Wildfire	724	8	90.5
Tornadoes	26	52	0.5
Wind/Thunderstorms/Hail	262	47	5.6
**Technological	26	13	2.0
Notes: *Compiled from data provided by DES and represents a regional frequency. ** Compiled from DES HAZMAT Response Database ***Hazards are not compiled in the Storm Events database separately for the Fort Peck Tribes jurisdiction. The values presented are the average of the values for Valley and Roosevelt counties.			

3.4.2 Hazard Impact Areas

Hazard impact areas describe the geographic extent a hazard can impact a jurisdiction and are uniquely defined on a hazard-by-hazard basis as discussed below. For purposes of conducting the risk analysis, all the hazard impact areas were defined as the percentage of area in each census block that would be affected.

3.4.2.1 Flooding

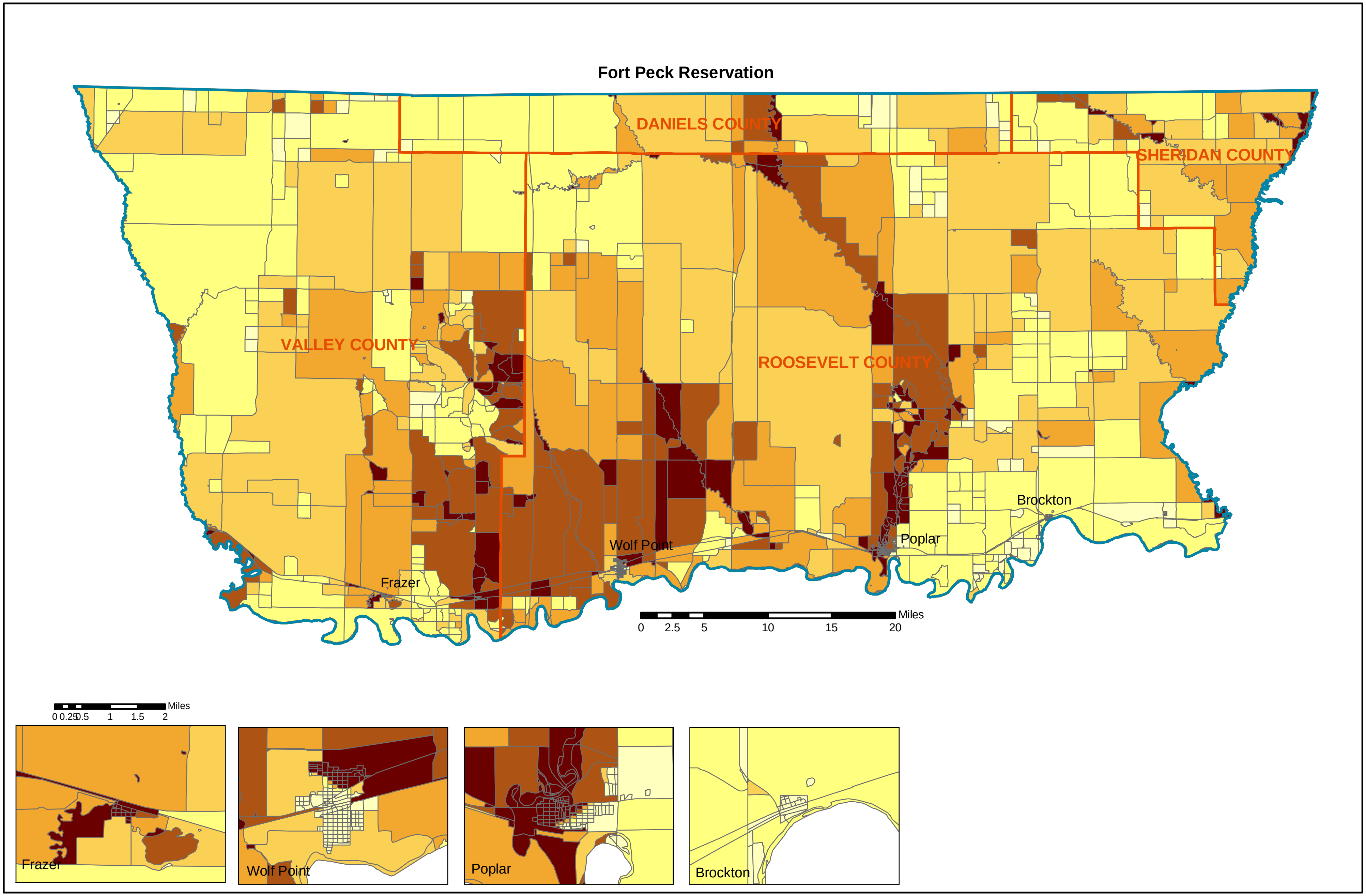
Ideally flooding would be modeled by using floodplain maps. The types of floodplain maps required to model flooding in a Geographic Information System (GIS) are vector representations of the floodplain boundaries like the FEMA Q3 maps. Currently, there are no FEMA Q3 digital flood data for the project area. In order to conduct an analysis of flood impacts, a generalized model of potential flood areas was developed by reviewing the existing flood plain maps and modeling them using data that does exist. Potential flooding areas of impact were created by identifying all rivers and streams upstream of a major flood control dam, and buffering them using the following criteria:

- Rivers 2500 feet each side
- Perennial Streams 1750 feet each side
- Intermittent Streams 750 feet each side

The buffered areas were then intersected with the census blocks in the GIS to define area of impact by block. ***Map 3-3*** depicts the percentage of area potentially impacted by flooding by census block. The disadvantage to this method is that it is fairly general and doesn't adequately address known flood prone areas. The advantages of this method are that the floodplain models are at a comparable level of spatial resolution to the data that they are being used to analyze (census blocks) and that it is not biased to only account for flood areas that currently are impacting structures.

3.4.2.2 Winter Storms

The entire project area is in a single climate region (BSk) according to the Köppen Climate Classification for the Conterminous United States developed by the Idaho State Climate Services Center at the University of Idaho. Characteristics of the BSk classification are:



N

County Boundary

Fort Peck Boundary

Area by Block

0%

0.01 - 20%

20 - 40%

40 - 60%

60 - 80%

80 - 100%

Flooding Hazard by Census Block
Fort Peck Reservation
Northeast Montana
Pre-disaster Mitigation
Map 3-3

- Semi-Arid, Steppe (Cool)
- Evaporation Exceeds Precipitation on Average
- Precipitation is More than Half but Less than Potential Evaporation
- Mean Average Temp is Below 18c/64.4f

Topographically there are no significant features that generate localized climate conditions that present significant changes in hazard risk in the project area. Therefore the hazard profile area for winter storms is uniform over the entire project area.

3.4.2.3 Wildfire

Grass and brush fires represent the greatest wildland fire risk for the project area. According to the Urban Wildland Interface Code: 2000 published by the International Fire Code Institute (IFCI) a "Light Fuel" is vegetation consisting of herbaceous plants and round wood less than ¼ inch in diameter – Grassland would fall in this category. Grassland in the project area is mainly composed of grazing land and farmland that is currently in the NRCS Conservation Reserve Program (CRP land). Because there is a significant amount of land in the CRP program in the project area and land is consistently being added and retracted from the CRP, all agricultural land was classified as potential wildfire risk areas. A Medium Fuel according to the Urban Wildland Interface Code: 2000 is vegetation consisting of round wood 1/3 to 3 inches in diameter. Shrub and grassland in the project area fit into this category.

The National Land Cover Data from the US Geological Survey (USGS) was used to define agricultural, grass, and shrub land for the project area. ***Map 3-4*** depicts fire risk areas. Data from the USFS Wildland Fire Assessment System were also evaluated for use in modeling fire risk but was determined to be too general for the project area.

3.4.2.4 Severe Thunderstorms

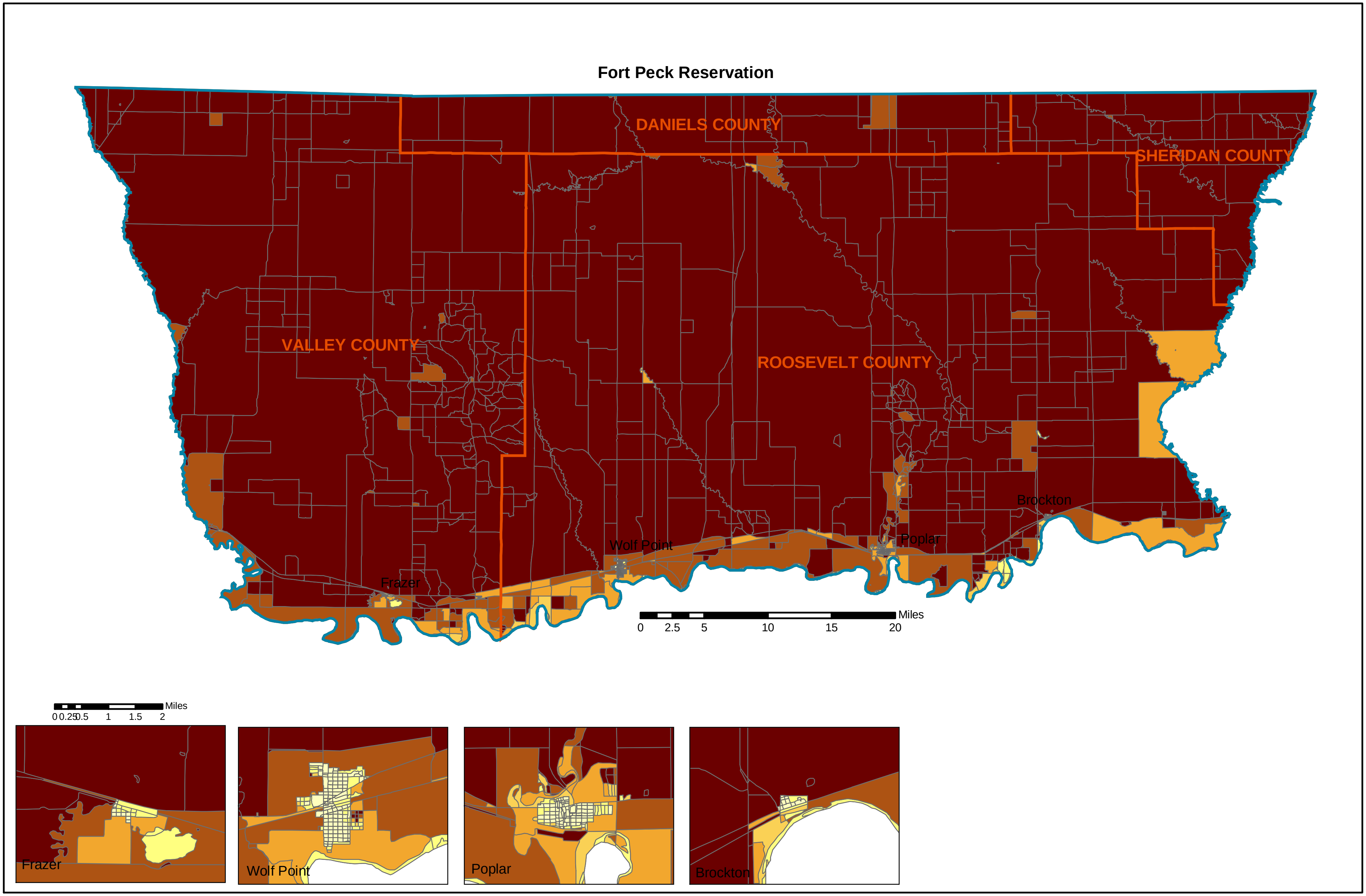
According to FEMA's wind zone classifications the entire project area is in Zone II (160 MPH Design Wind Speeds). According to FEMA the project area also has a single classification for tornado frequency (<1 Per 1000 square miles). Based on review of weather data and the determinations made for tornadoes, windstorms and winter storms, the entire project area has been classified with a uniform risk for severe thunderstorms including tornadoes and hail.

3.4.2.5 Human-Caused and Technological Hazards

Based on review of historical accounts of human-caused and technological hazards, the DES Hazardous Material Response database, and input from the public meetings, it was determined that a significant component of risk in this category was related to transportation of hazardous materials and transportation infrastructure. To model the spatial distribution of this risk we developed a GIS data layer of major transportation arteries, which included highways and railroad lines, buffered them by 0.25 miles, and then calculated the impact area by census block. ***Map 3-5*** depicts Transportation Related Technological Risk Areas.

3.4.2.6 Cumulative Hazard Areas

Cumulative hazards for the project area were calculated by summing the percent of each census block that contained flooding, fire, and transportation hazards. Other hazards where not included because they were determined to have uniform spatial distribution across the project area. ***Map 3-6*** depicts cumulative hazard areas by census block.

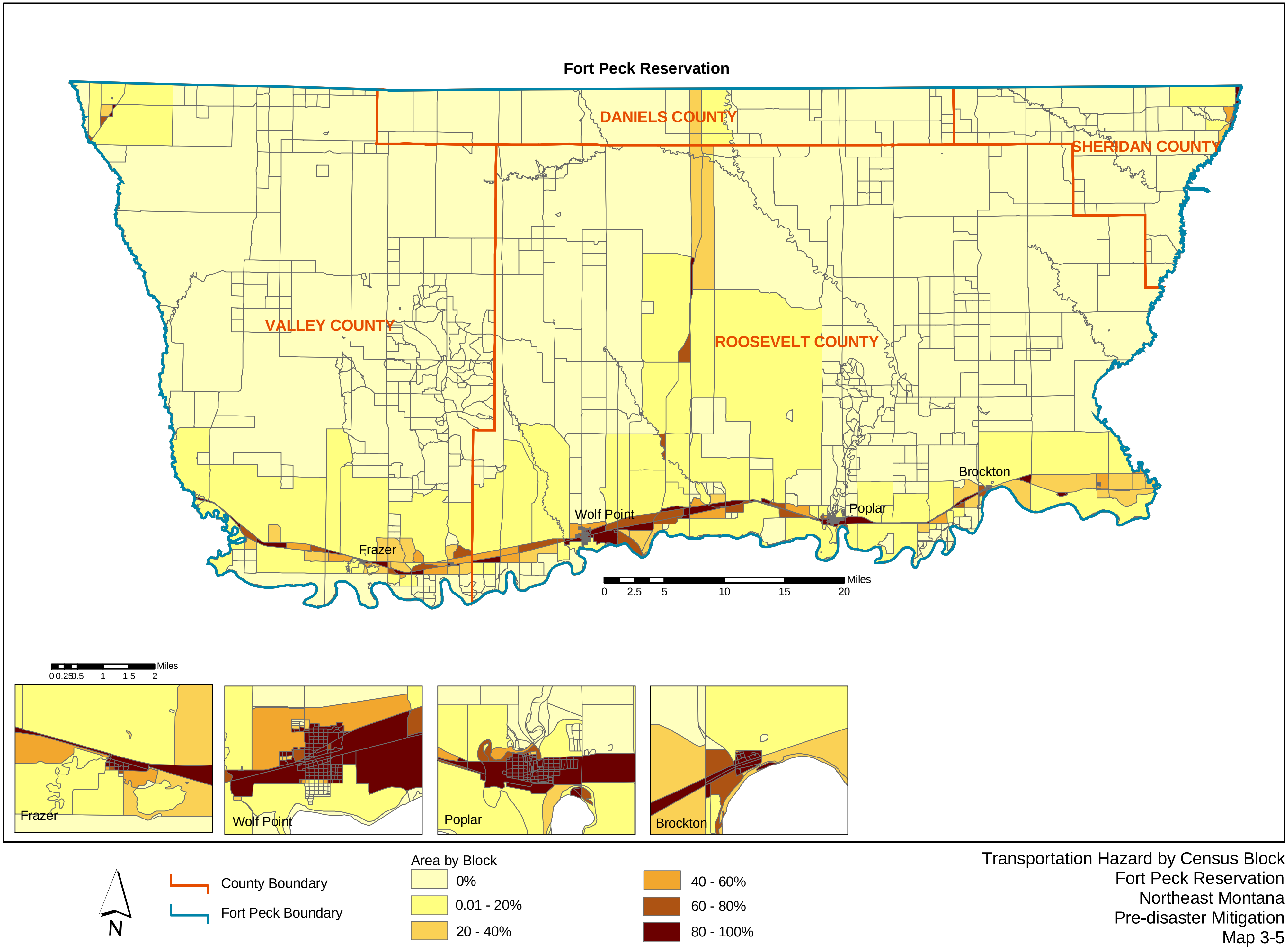


N

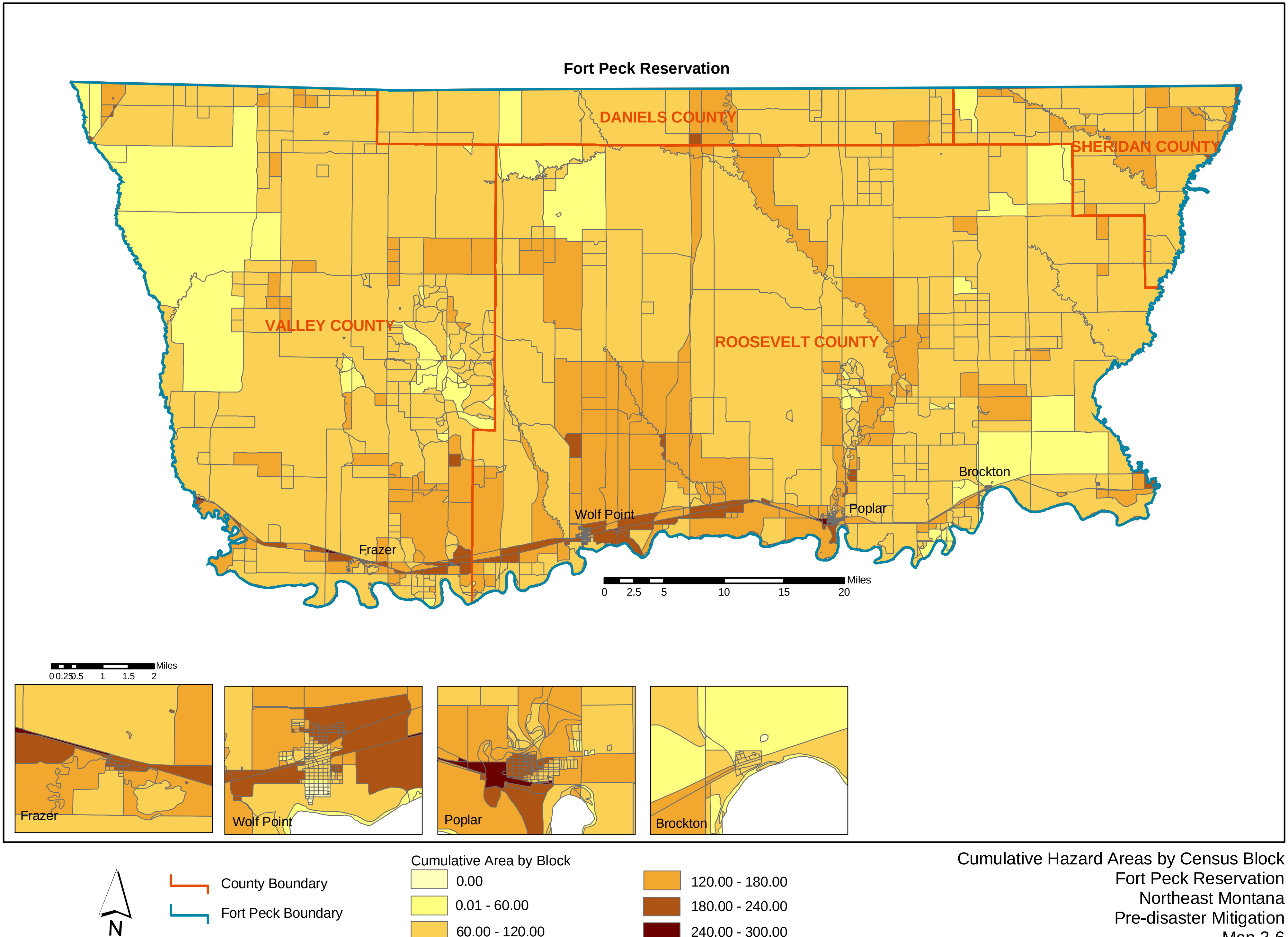
County Boundary
Fort Peck Boundary

Area by Block
0%
0.01 - 21%
21 - 53%
53 - 78%
78 - 93%
93 - 100%

Fire Hazard by Census Block
Fort Peck Reservation
Northeast Montana
Pre-disaster Mitigation
Map 3-4



Transportation Hazard by Census Block
Fort Peck Reservation
Northeast Montana
Pre-disaster Mitigation
Map 3-5



Cumulative Hazard Areas by Census Block
Fort Peck Reservation
Northeast Montana
Pre-disaster Mitigation
Map 3-6

Estimating potential losses and calculating risk requires evaluating where hazard areas and vulnerabilities to them coincide, how frequently the hazards occur, and then estimating the magnitude of damage resulting from a hazard event.

3.5 ASSESSING VULNERABILITY: ESTIMATING POTENTIAL LOSSES

3.5.1 Hazard Magnitudes

The percentage of structures or people exposed to a hazard who are negatively impacted is related to the nature of the hazard and intensity of the event and is expressed as the hazard magnitude. The hazard magnitude is required to develop estimates of structures and people impacted by the hazard. For this risk assessment, hazard magnitude estimates were developed by researching historical disaster records and other relevant data related to hazard intensity. Hazard magnitudes are expressed as a percent of structures or people impacted.

3.5.2 Risk Calculations

Risk calculations present a quantitative assessment of the vulnerability of structures, people, and critical facilities to individual hazards and cumulatively to all hazards. The equation used to develop the overall risk values is:

- Exposure x Frequency x Hazard Loss Magnitude

Where :

- Exposure = structures, vulnerable population, or critical facilities at risk as determined in ***Plan Section 3.4.2***
- Frequency = annual number of events determined by calculating the (number of hazard events / period of record) as described in ***Plan Section 3.4.1***
- Magnitude = percent of damage expected as described in ***Plan Section 3.5.1*** and presented in ***Table 3-10***

Table 3-10 presents the results of the risk calculations. While the results are presented as dollar values for Building $ Risk, numbers of people effected for Societal Risk, and numbers of facilities effected, they should not be interpreted literally as estimates of actual values. Due to data and modeling limitations the values presented are more appropriately used to evaluate the relative risk posed by the different hazard types.

TABLE 3-10 FORT PECK RESERVATION HAZARD VULNERABILITY ASSESSMENTS								
Hazard	**Frequency**	**Magnitude**	**Building $ Exposure**	**Societal Exposure**	**Critical Facilities Exposure**	**Building $ Risk**	**Societal Risk**	**Critical Facilities Risk**
Flooding	2	20.00%	$187,916,176	4449.60	17.28	$75,166,470	1779.84	6.91
Winter Storms	1.9	2.00%	$502,386,427	12578.00	49.00	$19,090,684	477.96	1.86
Wildfire	90.5	0.15%	$206,709,084	4563.84	3.44	$28,060,758	619.54	0.47
Tornadoes	0.5	0.50%	$502,386,427	12578.00	49.00	$1,255,966	31.45	0.12
Wind/Hail Thunderstorms	5.6	0.10%	$502,386,427	12578.00	49.00	$2,813,364	70.44	0.27
Technological	2	0.10%	$269,713,808	7,333	44.29	$539,428	14.67	0.09
Cumulative			$2,171,498,349	54,081	212	$126,926,670	2,993.89	9.72

4.0 MITIGATION STRATEGY

Specific mitigation goals and projects were developed for the Fort Peck Tribes in conjunction with public meetings held in two communities and stakeholder interviews. A matrix developed for project ranking that emphasized cost-benefit and input from local officials was used to determine project prioritization. Following is a description of goals and objectives used to mitigate natural and technological hazards that builds on the community's existing capabilities. Project implementation and legal framework are discussed at the conclusion of this section.

4.1 LOCAL HAZARD MITIGATION GOALS

The Plan goals describe the overall direction that tribal agencies, organizations, and citizens can take to work toward mitigating risk from natural and technological hazards. Goals and objectives of the Plan were developed during interviews and meetings with public officials and at the public meetings held at two locations; Wolf Point and Poplar. Hazard mitigation goals for the Fort Peck Tribes are identified below.

- Enhance Emergency Response System
- Reduce Impacts from Flooding
- Enhance Early Warning Capabilities
- Secure Integrity of Utilities and Infrastructure
- Minimize Risk of Wildfire at Urban Interface
- Minimize Economic Impact of Drought
- Reduce Risk of Hazardous Material Incidents

In addition to goals identified at the PDM public meetings, the City of Poplar provided goals and mitigation projects that were developed for their Growth Plan. A copy of this information is presented in ***Appendix D***.

4.2 MITIGATION OBJECTIVES AND ACTIONS

The broad range of potential mitigation activities presented in ***Appendix D*** were considered, and below is a list of mitigation objectives and the actions (projects) identified by the community. Projects marked with an asterisk are response-related actions identified as Tribal priorities. Although these projects may not be eligible for FEMA funding, the Tribe may secure alternate funding sources to implement these projects in the future. Mitigation projects specific to individual jurisdictions are noted within the list.

Enhance Emergency Response Systems

- Install pigtails (electrical wiring) at shelters and critical facilities to accommodate mobile generators
- * Purchase mobile generators for emergency response activities
- Provide training for first responders

Reduce Impacts from Flooding

- Enter into National Flood Insurance Program (Wolf Point, Poplar, Brockton, Frazer, Reserve)
- Improve storm water system along Hwy 2 in Wolf Point and south side of town (Wolf Point)
- Construct diversion (Brockton)
- Perform floodplain mapping (Reserve)

- Update dike (Reserve)

Enhance Early Warning Capabilities

- Upgrade siren systems in all communities
- Implement local warning system (like channel 15) for local communities
- Purchase weather radios for critical facilities and provide at discount to rural residents

Secure Integrity of Utilities and Infrastructure

- Install fencing and alarm system at water treatment plant and water supply wells

Minimize Risk of Wildfire at Urban Interface

- Institute weed control measures (mowing) along railroad
- Negotiate over haying of CRP land

Minimize Economic Impact of Drought

- Develop additional water supplies
- Negotiate for summer releases from Fort Peck Dam

Reduce Risk of Hazardous Material Incidents

- Relocate anhydrous ammonia tank currently located adjacent to Wolf Point city limits.

4.3 PROJECT RANKING AND PRIORITIZATION

A cost-benefit matrix was developed to rank the mitigation projects using the following criteria. Each project was assigned a "high", "medium", or "low" rank for *Population Impacted, Property Impacted*, and *Cost*. For the *Population Impacted* category, a "high" rank represents greater than 50 percent of Reservation residents; a "medium" rank represents 20 to 50 percent of Reservation residents; and a "low" rank represents less than 20 percent of reservation residents. For the *Property Impacted* and *Project Cost* categories, a "high" rank represents greater than $500,000, a "medium" rank represents between $100,000 and $500,000, and a "low" rank is less than $100,000. The matrix was completed by assigning each rank a numeric value as follows:

TABLE 4-1
COST-BENEFIT SCORING MATRIX

	Population Impacted	**Property Impacted**	**Cost**
High	5	5	1
Medium	3	3	3
Low	1	1	5

The overall cost-benefit was then calculated by summing the total score for each project. ***Table 4-2*** presents the Hazard Mitigation Project Cost-Benefit Matrix for the Fort Peck Tribes.

The tribal DES Coordinator, consulting with the Tribal Emergency Response Commission (TERC), also ranked each mitigation project as "high", "medium", and "low" based on community priorities. Projects identified by the Fort Peck Tribes as top priorities and their cost/benefit ranking, are presented in ***Table 4-3.***

TABLE 4-2

FORT PECK TRIBES COST/BENEFIT RANKING OF HAZARD MITIGATION PROJECTS

GOAL	***HAZARD MITIGATION PROJECTS***	***HAZARDS MITIGATED***	***POPULATION IMPACTED***	***PROPERTY IMPACTED***	***COST***	***COST/BENEFIT RANKING***
Reduce Impacts from Flooding	Enter into National Flood Insurance Program – Wolf Point, Poplar, Brockton, Frazer, Reserve	Flooding	High	High	Low	High
Reduce Impacts from Flooding	Construct flood diversion in Brockton	Flooding	Medium	Medium	Medium	Medium
Enhance Early Warning Capabilities	Upgrade siren systems in all communities	Fire, Flooding, Winter Storms, Tornadoes	High	High	Low	High
Minimize Risk of Wildfire at Urban Interface	Institute weed control measures (mowing) along railroad	Fire	Medium	High	Low	High
Minimize Risk of Wildfire at Urban Interface	Negotiate over haying of CRP land	Fire	Medium	High	Low	High
Reduce Risk of Hazardous Material Incidents	Relocate anhydrous ammonia tank adjacent to Wolf Point city limits.	Technological	High	High	Low	High
Enhance Emergency Response Systems	Purchase mobile generators for emergency response activities	Fire, Flooding, Winter Storms, Tornadoes	Medium	Low	Low	Medium
Enhance Emergency Response Systems	Provide training for first responders	Fire, Flooding, Winter Storms, Tornadoes	Medium	Low	Low	Medium
Reduce Impacts from Flooding	Improve storm water system along Hwy 2 in Wolf Point and south side of town	Flooding	Medium	High	High	Medium
Secure Integrity of Utilities and Infrastructure	Install fencing and alarm system at water treatment plant and water supply wells	Technological	Medium	Low	Low	Medium
Minimize Economic Impact of Drought	Develop alternate water supplies for irrigation	Drought	Medium	Medium	High	Medium
Enhance Emergency Response Systems	Install pigtails (electrical wiring) at shelters and critical facilities to accommodate mobile generators	Fire, Flooding, Winter Storms, Tornadoes	Medium	Low	Low	Medium
Minimize Economic Impact of Drought	Negotiate for summer releases from Fort Peck Dam	Drought	Medium	Low	Low	Medium
Reduce Impacts from Flooding	Update dike in Reserve	Flooding	Low	Medium	Medium	Medium
Reduce Impacts from Flooding	Perform floodplain mapping in Reserve	Flooding	Low	Medium	Low	Medium
Enhance Early Warning Capabilities	Purchase weather radios for critical facilities (consider solar radios). Provide weather radios at discount to rural residents	Fire, Flooding, Winter Storms, Tornadoes	High	High	Low	High

POPULATION IMPACTED
High = > 50% of County residents
Medium = 20 to 50% of County residents
Low = < 20% County residents

PROPERTY IMPACTED & PROJECT COST
High = > $500,000
Medium = $100,000 to $500,000
Low = < $100,000

COST BENEFIT FORMULA
High = "5" for Population Impacted & Property Impacted; "1" for Cost
Medium = "3" for Population Impacted & Property Impacted; "3" for Cost
Low = "1" for Population Impacted & Property Impacted; "5" for Cost

COST/BENEFIT RANKING
High = 11 to 15
Medium = 6 to 10
Low = 0 to 5

TABLE 4-3

FORT PECK TRIBES PRIORITY HAZARD MITIGATION PROJECTS

GOAL	***HAZARD MITIGATION PROJECTS***	***HAZARDS MITIGATED***	***TRIBAL PRIORITY***
Enhance Emergency Response Systems	* Purchase mobile generators for emergency response activities	Fire, Flooding, Winter Storms, Tornadoes	High
Enhance Emergency Response Systems	Provide training for first responders	Fire, Flooding, Winter Storms, Tornadoes	High
Reduce Impacts from Flooding	Enter into National Flood Insurance Program – Wolf Point, Poplar, Brockton, Frazer, Reserve	Flooding	High
Reduce Impacts from Flooding	Improve storm water system along Hwy 2 in Wolf Point and south side of town	Flooding	High

Notes: * indicates response-related project - funding source other than FEMA may be require

4.4 PROJECT IMPLEMENTATION AND LEGAL FRAMEWORK

Once the Fort Peck Tribes PDM Plan is formally adopted, the Tribe will use the cost-benefit analysis in the Plan to focus project prioritization. Mitigation projects will be considered for funding through federal grant programs, and when other funds are made available through the Tribe. The TERC, a consortium of local officials and disaster planning personnel, will be the coordinating agency for project implementation. The TERC has the capacity to organize resources, prepare grant applications, and oversee project implementation, monitoring, and evaluation. Coordinating organizations may include local or regional agencies that are capable of, or responsible for, implementing activities and programs. The tribal DES Coordinator will be responsible for mitigation project administration.

A number of local regulations and policies form the legal framework available to implement hazard mitigation goals and projects of the Fort Peck Tribes. A list of these regulations and plans is presented below.

- Floodplain and Floodway Management Ordinance
- Land Use Plan (under development)
- Economic Development Plan
- Transportation Plan

A summary of how the PDM Plan can be integrated into this legal framework is presented below.

- Use the PDM Plan to help the Tribal Landuse Plan meet the goal of protecting public health and property from natural hazards.
- Initiate zoning ordinances in conjunction with flood mitigation projects to prevent development in flood-prone areas.
- Partner with other organizations and agencies with similar goals to promote building codes that are more disaster resistant on the State level.
- Develop incentives for local governments, citizens, and businesses to pursue hazard mitigation projects.
- Allocate tribal resources and assistance for mitigation projects.
- Partner with other organizations and agencies in northeast Montana to support hazard mitigation activities

5.0 PLAN MAINTENANCE PROCEDURES

The Plan maintenance section of this document details the formal process that will ensure that the Fort Peck Tribes Pre-Disaster Mitigation Plan remains an active and relevant document. The Plan maintenance process includes a schedule for monitoring and evaluating the Plan and producing a Plan revision every five years. This section describes how the Tribe will integrate public participation throughout the Plan maintenance process. Also included in this section is an explanation of how the Tribe intends to incorporate the mitigation strategies outlined in this Plan into existing planning mechanisms.

5.1 MONITORING, EVALUATING AND UPDATING THE PLAN

The Fort Peck Tribes Pre-Disaster Mitigation Plan will be reviewed every two years, or as deemed necessary by knowledge of new hazards, vulnerabilities, or other pertinent reasons. The review will determine whether a Plan update is needed prior to the required five year update. The Plan review will identify new mitigation projects and evaluate the effectiveness of mitigation priorities and existing programs.

The tribal DES Coordinator will be responsible for scheduling a meeting of the Tribal Emergency Response Commission (TERC) to review and update the Plan. The meeting will be open to the public and advertised in the local newspaper to solicit public input. The TERC, assisted by the public, will review the goals and mitigation projects to determine their relevance to changing situations on the reservation, as well as changes in federal policy, and to ensure they are addressing current and expected conditions. The TERC and public will also review the risk assessment portion of the Plan to determine if this information should be updated or modified, given any new available data. The list of critical facilities will also be reviewed and enhanced with additional details. The tribal DES Coordinator will give a status report detailing the success of various mitigation projects, difficulties encountered, success of coordination efforts, and which strategies should be revised. The status report will be published in the local newspaper to update local citizens.

The tribal DES Coordinator will be responsible for the five year Plan update, and will have six months to make appropriate changes to the Plan before submitting it to the TERC and public for review and approval. Before the end of the five-year period, the updated Plan will be submitted to the State Hazard Mitigation Officer and the FEMA for acceptance. The tribal DES Coordinator will notify all holders of the Plan when changes have been made.

5.2 IMPLEMENTATION THROUGH EXISTING PROGRAMS

The Fort Peck Tribes are currently developing a Land Use Plan to address planning goals and zoning. The Pre-Disaster Mitigation Plan provides a series of projects – many of which will be closely related to the goals and objectives of the Land use Plan. The Fort Peck Tribes will have the opportunity to implement hazard mitigation projects through existing programs and procedures. Local officials will work with the tribal departments to ensure hazard mitigation projects are consistent with planning goals and integrate them, where appropriate.

Within six months of formal adoption of the PDM plan, mitigation goals will be incorporated into the Tribal Land Use Plan. The meetings of the TERC will provide an opportunity for local officials to report back on the progress made on the integration of mitigation planning elements into tribal planning documents and procedures.

5.3 CONTINUED PUBLIC INVOLVEMENT

The Fort Peck Tribes are dedicated to involving the public directly in review and updates of the Pre-Disaster Mitigation Plan. The public will have many opportunities to provide feedback about the Plan. Copies of the Plan will be catalogued and kept at all appropriate agencies with the Tribe as well as at the Public Library. The existence and location of these copies will be publicized in the Tribal newspaper. Section 2.0 of the Plan includes the address and the phone number of the tribal DES Coordinator responsible for keeping track of public comments on the Plan.

A series of public meetings will also be held prior to each two year review and five year update, or at lesser intervals when deemed necessary by the TERC. The meetings will provide the public a forum for which they can express its concerns, opinions, or ideas about the Plan. The DES Coordinator will be responsible for using tribal resources to publicize the annual public meetings and maintain public involvement through the newspapers and radio.

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